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CONTINUATION OF THE
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VOL. XXVI.

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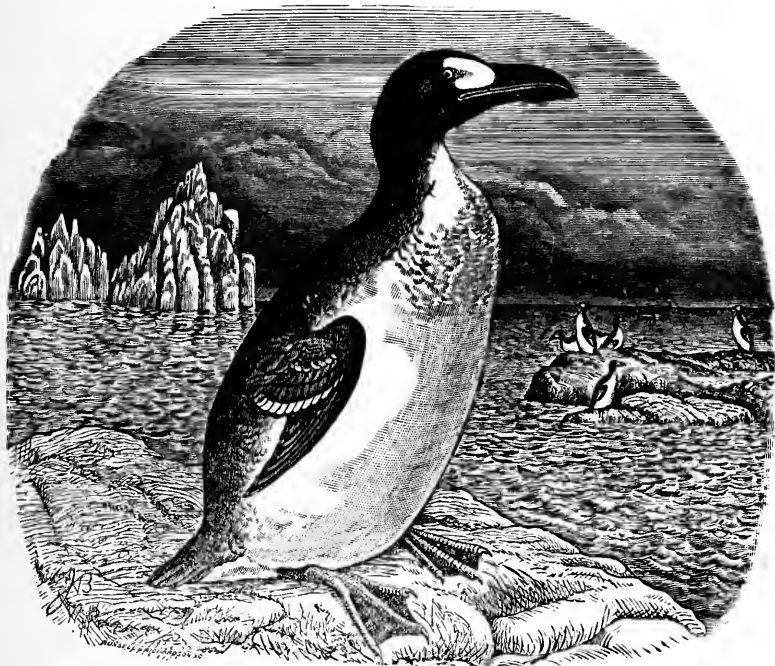
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EDITOR

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OATES, EUGENE WILLIAM, 1 Carlton Gardens, Ealing, London, W...	1884
PALMÉN, DR. J. A., Helsingfors, Finland.....	1883
PYCRAFT, W. P., British Museum (Nat. Hist.), Cromwell Road, Lon- don, S. W.....	1902
RAMSEY, E. P., Sydney, New South Wales.....	1884
RINGER, FREDERIC, Nagasaki.....	1888
ROTHSCHILD, HON. WALTER L., Zoölogical Museum, Tring, England.	1898
SCHALOW, HERMAN, Traunsteinerstrasse 2 ¹ , Berlin, W. 30.....	1884
SCLATER, WILLIAM LUTLEY, Colorado Springs, Colo.....	1906
SHELLEY, Capt. G. E., 39 Edgerton Gardens, South Kensington, London, S. W.....	1884
SUSHKIN, DR. PETER, Imperial University, Moscow.....	1903
THEEL, DR. HJALMAR, University of Upsala, Upsala, Sweden.....	1884
TSCHUSI ZU SCHMIDHOFFEN, VICTOR RITTER VON, Villa Tännenhof, bei Hallein, Salzburg, Austria.....	1884
WATERHOUSE, F. H., 3 Hanover Square, London, W.....	1889
WINGE, DR. HERLUF, University Zoölogical Museum, Copenhagen....	1903
WORCESTER, Prof. DEAN C., Manila, P. I.....	1903
ZELEDON, Don JOSÉ C., San José, Costa Rica.....	1884

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SETON, ERNEST THOMPSON, Cos Cob, Conn.....	1901
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THAYER, ABBOTT H., Monadnock, N. H.....	1901
THAYER, JOHN ELIOT, Lancaster, Mass.....	1905
TODD, W. E. CLYDE, Carnegie Museum, Pittsburgh, Pa.....	1901
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TOWNSEND, CHARLES H., Aquarium, Battery Park, New York City.....	1901
TOWNSEND, Dr. CHARLES WENDELL, 76 Marlborough St., Boston, Mass.....	1905
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AIKEN, Hon. JOHN, Greenfield, Mass.....	1905
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BEHR, OTTO, Lopez, Pa.....	1907
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BERIER, DE LAGNEL, Ridgewood, N. J.....	1885
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BLACKWELDER, ELIOT, Univ. of Wisconsin, Madison, Wis.....	1895
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BOWDISH, Mrs., B. S., Demarest, N. J.....	1902
BOWDITCH, HAROLD, Pond St., Jamaica Plain, Mass.....	1900
BOWLES, JOHN HOOPER, 401 S. G St., Tacoma, Wash.....	1891
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BRACKEN, Mrs. HENRY MARTYN, 1010 Fourth St. S. E., Minneapolis, Minn.....	1897
BRADFORD, Mrs. J. L., Morris Building, New Orleans, La.....	1897
BRADFORD, MOSES B. L., Concord Public Library, Concord, Mass....	1889
BRADLEE, THOMAS STEVENSON, Somerset Club, Boston, Mass.....	1902
BRANDRETH, COURTENAY, Cliff Cottage, Ossining, N. Y.....	1905
BRANDRETH, FRANKLIN, Cliff Cottage, Ossining, N. Y.....	1889
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BREWSTER, EDWARD EVERETT, 316 East C St., Iron Mountain, Mich.	1893
BRIDGE, Mrs. EDMUND E., 52 Wyman St., West Medford, Mass.....	1902
BRIGHT, Miss ANNA L., Green Hill Farm, Overbrook, Pa.....	1903
BRIMLEY, H. H., Raleigh, N. C.....	1904
BRISTOL, JOHN I. D., 45 West 74th St., New York City.....	1907
BROCK, Dr. HENRY HERBERT, 687 Congress St., Portland, Me.....	1894 ✓
BROOKS, ALLAN, Okanagan Landing, B. C.....	1902
BROOKS, WINTHROP S., Adams St., Milton, Mass.....	1907
BROOKS, Rev. EARLE AMOS, Weston, W. Va.....	1892
BROWN, ARTHUR L., 217 Spring St., West Roxbury, Mass.....	1908
BROWN, C. EMERSON, Boston Society Natural History, Boston, Mass.	1908
BROWN, EDWARD J., U. S. Nat. Museum, Washington, D. C.....	1891
BROWN, HUBERT H., 100 Gothic Ave., W., Toronto, Ontario.....	1889
BROWN, STEWARDSON, 20 E. Penn St., Germantown, Philadelphia, Pa.	1895
BROWNSON, W. H., Superintendent of Schools, Portland, Me.....	1903 ✓
BRUEN, FRANK, 218 Main St., Bristol, Conn.....	1908
BRYANT, OWEN, Cohasset, Mass.....	1903
BUCK, HENRY ROBINSON, 18 Girard Ave., Hartford, Conn.....	1897
BUMPUS, Dr. HERMON C., Am. Mus. Nat. Hist., New York City.....	1901
BURGESS, JOHN KINGSBURY, Chestnut St., Dedham, Mass.....	1898
BURKE, Wm. BARDWELL, 130 Spring St., Rochester, N. Y.....	1901
BURNETT, WILLIAM L., Box 483, Loveland, Colo.....	1895
BURR, FREEMAN F., 39 Thompson Ave., East Haven, Conn.....	1907
BURT, H. P., New Bedford, Mass.....	1908
BURTCH, VERDI, Branchport, N. Y.....	1903
BUTLER, Miss CHARLOTTE W., 75 Cabot St., Beverly, Mass.....	1904
BUTTRICK, PHILIP L., 296 Columbus Ave., New Haven, Conn.....	1907
BUXBAUM, Mrs. CLARA E., St. Joseph, Mich.....	1895

CABOT, LOUIS, Brookline, Mass.....	1904
CADY, Mrs. JOHN H., 127 Power St., Providence, R. I.....	1905
CALLENDER, JAMES PHILLIPS, 603 Springfield Ave., Summit, N. J.....	1903
CAMERON, E. S., Fallon, Montana.....	1903
CAMPBELL, Mrs. ROBERT, 280 Wildwood Ave., Jackson, Mich.....	1905
CAREY, HENRY R., Milton Academy, Milton, Mass.....	1908
CARPENTER, Rev. CHARLES KNAPP, 183 Fox St., Aurora, Ill.....	1894
CARPENTER, GEORGE I., 696 Halsey St., Brooklyn, N. Y.....	1907
CARRIKER, M. A., Jr., Carnegie Museum, Pittsburgh, Pa.....	1907
CARTER, JOHN D., Lansdowne, Pa.....	1907
CASE, Rev. BERT F., Richmond Beach, Wash.....	1903
CASE, CLIFFORD M., 7 Holcomb St., Hartford, Conn.....	1892
CASH, HARRY A., 54 Spring St., Pawtucket, R. I.....	1898
CASKEY, ROBERT C., 58 Milk St., Morristown, N. J.....	1908
CATLIN, JAMES P., Ottawa, Ill.....	1905
CHAMBERLAIN, CHAUNCY W., 36 Lincoln St., Boston, Mass.....	1885
CHAMBERS, W. LEE, Santa Monica, Cal.....	1907
CHANEX, RALPH W., 6046 Woodlawn Ave., Chicago, Ill.....	1907
CHAPIN, Prof. ANGIE CLARA, 25 Freeman Cottage, Wellesley, Mass..	1896
CHAPIN, JAMES, 623 W. 142d St., New York City.....	1906
CHAPMAN, Mrs. F. M., Englewood, N. J.....	1908
CHARLES, FRED LEMAR, De Kalb, Ill.....	1908
CHASE, Mrs. AGNES, 1350 F St. N. E., Washington, D. C.....	1896
CHASE, SIDNEY, Nantucket, Mass.....	1904
CHRISTY, BAYARD H., 403 Frederick Ave., Sewickley, Pa.....	1901
CHUBB, SAMUEL H., Amer. Mus. Nat. Hist., New York City.....	1894
CLARK, B. PRESTON, 55 Kilby St., Boston, Mass.....	1907
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CLARK, Miss EMILY L., 103 Main St., St. Johnsbury, Vt.....	1905
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CLARK, Miss SUSAN E., 103 Main St., St. Johnsbury, Vt.....	1905
CLARKE, CHARLES E., 14 Ossipee Road, West Somerville, Mass.....	1907
CLARKE, Dr. CHARLES K., Toronto Asylum, Toronto, Ont.....	1902
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CLARKE, ROWENA A., Kirkwood Station, St. Louis, Mo.....	1906
CLEAVES, HOWARD H., Princes Bay, Staten Island, N. Y.....	1907
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CLEVELAND, Dr. CLEMENT, 925 Park Ave., New York City.....	1903
COALE, HENRY K., Highland Park, Ill.....	1883
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CURRIE, ROLLA P., Dept. of Agriculture, Washington, D. C.	1895
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DIONNE, C. E., Laval University, Quebec, Que.	1893
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DODGE, JULIAN M., South Hamilton, Mass.	1903

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DUGMORE, ARTHUR RADCLYFFE, Newfoundland, N. J.	1899
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FOX, Dr. WILLIAM H., 1826 Jefferson Place, Washington, D. C.....	1883
FRANKLIN, DWIGHT, Amer. Mus. Nat. Hist., New York City.....	1907
FRASER, DONALD, Johnstown, N. Y.....	1902
FREEMAN, Miss HARRIET E., 37 Union Park, Boston, Mass.....	1903
FRENCH, CHARLES H., Canton, Mass.....	1904
FRENCH, Miss TERESA I., Canton, Mass.....	1908
FULLER, CLARENCE T., 56 Lefferts Place, Brooklyn, N. Y.....	1907
FULLER, T. OTIS, Needham, Mass.....	1904
FUTCHER, Dr. THOMAS B., 3 W. Franklin St., Baltimore, Md.....	1906
GAINES, EDWARD F., Ritzville, Wash.....	1908
GANO, Miss LAURA, Earlham Place, Richmond, Ind.....	1903
GARDINER, CHARLES BARNES, 5 Minard Place, Norwalk, Ohio.....	1903
GARRICK, JAMES P., Jr., Weston, S. C.....	1906
GATES, FRANK C., 2725 N. Lincoln St., Chicago, Ill.....	1908
GATH, JOHN, Box 236, Torrington, Conn.....	1901
GIBSON, LANGDON, 18 Washington Ave., Schenectady, N. Y.....	1904
GIFFORD, EDWARD WINSLOW, Cal. Acad. Sci., San Francisco, Cal....	1904
GILMAN, M. FRENCH, Sacaton, Arizona.....	1907
GOODALE, Dr. JOSEPH LINCOLN, 258 Beacon St., Boston, Mass.....	1885
GOODRICH, JULIET T., 10 Astor St., Chicago, Ill.....	1904
GOODWIN, Miss AMELIA M., 10 Follen St., Cambridge, Mass.....	1904
GOSS, Mrs. ALETTA W., 5475 Ridgewood Court, Chicago, Ill.....	1902
GOULD, JOSEPH E., 5 Clifton St., Norfolk, Va.....	1889
GRANGER, Miss HELEN, Pierce Hall, Cambridge, Mass.....	1904
GRANGER, WALTER W., Amer. Mus. Nat. Hist., New York City....	1891
GRAVES, Mrs. CHARLES B., 66 Franklin St., New London, Conn.....	1905
GREENOUGH, Mrs. AMELIA P., 377 Beacon St., Boston, Mass.....	1904
GREENOUGH, HENRY VOSE, 23 Monmouth Court, Brookline, Mass....	1901
GREGORY, STEPHEN S., Jr., 100 Washington St., Chicago, Ill.....	1906
GRISCOM, LUDLOW, 21 Washington Sq., N., New York City.....	1908
GROSS, ALFRED O., Nat. Hist. Bldg., Univ. of Illinois, Urbana, Ill...	1907
HADLEY, ALDEN H., Monrovia, Indiana.....	1906
HALES, HENRY, Ridgewood, N. J.....	1890
HALL, H. PORTER, Leominster, Mass.....	1904
HANKINSON, THOMAS LEROY, Charleston, Ill.....	1897

HANN, HERBERT H., 700 Springfield Ave., Summit, N. J.....	1903
HARDON, MRS. HENRY W., 315 West 71st St., New York City.....	1905
HARDY, JOHN H., Jr., 24 Irving St., Arlington, Mass.....	1905
HARPER, FRANCIS, 557 First Ave., College Point, N. Y.....	1907
HARPER, SAMUEL A., 409 N. 3rd Ave., Maywood, Ill.....	1908
HARRIMAN, Miss MARY, 1 E. 55th St., New York City.....	1899
HART, CHARLES G., Box 47, East Berlin, Conn.....	1908
HARVEY, Miss RUTH SAWYER, Bond Hill, Cincinnati, Ohio.....	1902
HASKELL, Miss HELEN P., 1207 Henry St., Alton, Ill.....	1905
HATHAWAY, HARRY S., Box 498, Providence, R. I.....	1897
HAVEMEYER, H. O., Jr., 113 Wall St., New York City.....	1893
HAYES, Miss PAULINE J., 212 S. Sycamore St., Centralia, Ill.....	1907
HAZARD, Hon. R. G., Peace Dale, R. I.....	1885
HEAD, Miss ANNA, 2538 Channing Way, Berkeley, Cal.....	1903
HEIL, CHARLES E., Needham, Mass.....	1908
HEINRICH, ARTHUR O., Box 18, Baldwin, N. Y.....	1908
HELME, ARTHUR H., Miller Place, N. Y.....	1888
HENDERSON, Judge JUNIUS, Boulder, Colo.....	1903
HENDRICKSON, W. F., 276 Hillside Ave., Jamaica, N. Y.....	1885
HENNING, CARL FRITZ, 922 8th St., Boone, Ia.....	1906
HENNINGER, Rev. WALTHER F., New Bremen, Ohio.....	1898
HERRICK, HAROLD, 25 Liberty St., New York City.....	1905
HIGBEE, HARRY G., 13 Austin St., Hyde Park, Mass.....	1900
HILL, A. C., 400 Pleasant St., Belmont, Mass.....	1905
HILL, JAMES HAYNES, Box 485, New London, Conn.....	1897
HILL, Mrs. THOMAS R., 4629 Baltimore Ave., Philadelphia, Pa....	1903
HINE, Prof. JAMES STEWART, Ohio State Univ., Columbus, Ohio....	1899
HINE, Mrs. JANE L., Sedan, Ind.....	1890
HITCHCOCK, FRANK H., Metropolitan Club, Washington, D. C.....	1891
HIX, GEORGE E., 630 Columbus Ave., New York City.....	1904
HODGE, Prof. CLIFTON FREMONT, Clark Univ., Worcester, Mass....	1899
HOLBROOK, Miss ISABEL B., R. I. Normal School, Providence, R. I....	1905
HOLDEN, Mrs. EMELINE R., 13 E. 79th St., New York City.....	1902
HOLDEN, Mrs. EDWIN B., 323 Riverside Drive, New York City....	1903
HOLLAND, Dr. WILLIAM J., 5th and Bellefield Aves., Pittsburgh, Pa.	1899
HOLLISTER, NED, Biological Survey, Washington, D. C.....	1894
HOLLISTER, WARREN D., care of Continental Oil Co., Denver, Colo..	1901
HOLMAN, RALPH H., 33 Chestnut St., Stoneham, Mass.....	1907
HOLT, ERNEST G., Y. M. C. A., Montgomery, Ala.....	1907
HOLT, Miss NANCY W. C., 136 Chauncey St., Cambridge, Mass.....	1908
HONYWILL, ALBERT W., Jr., 135 Vanderbilt Scientific, Yale Uni- versity, New Haven, Conn.....	1907
HORSFALL, BRUCE, 67 Wiggins St., Princeton, N. J.....	1905
HOWELL, BENJAMIN F., Jr., R. F. D. No. 1, Boonton, N. J.....	1907
HOWE, CARLTON D., Essex Junction, Vt.....	1901
HOWE, Miss LOUISE, 53 Linden St., Brookline, Mass.....	1908

HOWE, REGINALD HEBER, Jr., Middlesex School, Concord, Mass.	1895
HOWLAND, RANDOLPH H., 164 Wildwood Ave., Upper Montclair, N. J.	1903
HOYT, WILLIAM H., Box 425, Stamford, Conn.	1907
HUBBARD, LUCIUS, 116 N. Main St., South Bend, Ind.	1908
HUBBARD, Dr. LUCIUS L., Houghton, Mich.	1907
HUBBARD, Mrs. SARA A., 177 Woodruff Ave., Brooklyn, N. Y.	1891
HUNN, JOHN T. SHARPLESS, 1218 Prospect Ave., Plainfield, N. J.	1895
HUNT, CHRESWELL J., 225 N. 53rd St., West Philadelphia, Pa.	1902
HUNTER, W. D., Box 208, Dallas, Texas.	1899
INGALLS, CHARLES E., East Templeton, Mass.	1885
INGERSOLL, ALBERT M., 836 5th St., San Diego, Cal.	1885
IRVING, JOHN, 52 Broadway, care of B. N. Cardoza, N. Y. City.	1894
ISHAM, C. B., 30 E. 63d St., New York City.	1891
IVES, ROY C., R. R. No. 2, Clare, Iowa.	1908
JACKSON, THOMAS H., 304 N. Franklin St., West Chester, Pa.	1888
JAGER, H. J., 222 State Ave., Owatonna, Minn.	1904
JENNEY, CHARLES F., 35 Congress St., Boston, Mass.	1905
JOHNSON, Mrs. GRACE PETTIS, Museum of Nat. Hist., Springfield, Mass.	1908
JOHNSON, FRANK EDGAR, 16 Amackassin Terrace, Yonkers, N. Y.	1888
JOHNSON, JAMES HOWARD, Bradford, N. H.	1894
JOHNSON, WALTER ADAMS, 18 Gramerey Park, New York City.	1898
JOHNSON, WILLIAM S., Boonville, N. Y.	1893
JORDAN, A. H. B., Everett, Wash.	1888
JUDD, ELMER T., Cando, N. D.	1895
JUDD, ROBERT S., Bethel, Conn.	1906
KEYS, JAMES EDWARD, 328 St. George St., London, Ontario.	1899
KEIM, THOMAS DANIEL, 405 Radcliffe St., Bristol, Pa.	1902
KELLOGG, CHARLES D., North Newry, Maine.	1908
KELLOGG, Prof. VERNON L., Stanford University, Cal.	1888
KENDALL, Miss BLANCHE, 20 Dudley St., Brookline, Mass.	1904
KENNARD, FREDERIC HEDGE, Dudley St., Newton Centre, Mass.	1892
KENT, EDWIN C., 90 West St., New York City.	1907
KERMODE, FRANCIS, Curator Provincial Museum, Victoria, B. C.	1904
KEYES, Prof. CHAS. R., Mt. Vernon, Ia.	1904
*KIDDER, NATHANIEL T., Milton, Mass.	1906
KILGORE, WILLIAM, Jr., Hopkins, Minn.	1906
KING, LE ROY, 20 E. 84th St., New York City.	1901
KIRKHAM, Mrs. JAMES W., 275 Maple St., Springfield, Mass.	1904
KIRKWOOD, FRANK C., Long Green, Md.	1892
KNAEBEL, ERNEST, 1040 Josephine St., Denver, Colo.	1906
KNAPP, Mrs. HENRY A., 301 Quincy Ave., Scranton, Pa.	1957
KNOLHOFF, FERDINAND WILLIAM, 28 Winans St., East Orange, N. J.	1890
KOPMAN, HENRY HAZLITT, 410 Pine St., New Orleans, La.	1899
KUSER, ANTHONY R., Bernardsville, N. J.	1908
KUTCHIN, Dr. VICTOR, Green Lake, Wis.	1905
LACEY, HOWARD GEORGE, Kerrville, Texas.	1899

LANG, HERBERT, Amer. Mus. Nat. Hist., New York City	1907
LANGMAID, Miss BERTHA, 2 Gordon Terrace, Brookline, Mass.	1908
LANTZ, Prof. DAVID ERNEST, Dept. of Agriculture, Washington, D. C.	1885
LARRABEE, AUSTIN P., 840 Kipling St., Palo Alto, Cal.	1902
LATIMER, Miss CAROLINE P., 19 Pierrepont St., Brooklyn, N. Y.	1898
LAURENT, PHILIP, 31 E. Mt. Airy Ave., Mt. Airy, Philadelphia, Pa.	1902
LAW, J. EUGENE, Hollywood, Cal.	1907
LAWRENCE, JOHN B., 126 E. 30th St., New York City.	1907
LELANDE, H. J., 1320 E. 15th St., Los Angeles, Cal.	1907
LEVEY, W. CHARLESWORTH, 53 Waverly St., Brookline, Mass.	1908
LEIBELSPERGER, WALTER H., Fleetwood, Pa.	1907
LINTON, CLARENCE B., 1754 Pine St., Long Beach, Cal.	1908
LONG, WILLIAM B., 249 Tappan St., Brookline, Mass.	1907
LOOMIS, JOHN A., Mereta, Texas.	1887
LORD, Rev. WILLIAM R., Needham, Mass.	1901
LOW, ETHELBERG T., 30 Broad St., New York City.	1907
LUM, EDWARD H., Chatham, N. J.	1904
LURVEY, SAMUEL A., Box 161, South West Harbor, Maine.	1908
MACDOUGALL, GEORGE R., 131 W. 73rd St., New York City.	1890
MACKIE, WM. C., 54 Coolidge St., Brookline, Mass.	1908
MACLAY, MARK W., Jr., 70 West 55th St., New York City.	1905
MADDOCK, Miss EMELINE, The Belgravia, Philadelphia, Pa.	1897
MAHER, J. E., Windsor Locks, Conn.	1902
MAITLAND, ROBERT L., 45 Broadway, New York City.	1889
MARBLE, RICHARD M., 7 Keiffer St., Brookline, Mass.	1907
MARCH, Prof. JOHN LEWIS, Union College, Schenectady, N. Y.	1903
MARRS, Mrs. KINGSMILL, Saxonville, Mass.	1903
MARSDEN, H. W., Witch Creek, Cal.	1904
MARSH, DANIEL J., Five Cent Savings Bank, Springfield, Mass.	1894
MARTIN, Miss MARIA ROSS, College Ave., New Brunswick, N. J.	1902
MARX, EDWARD J. F., 8 Chestnut Terrace, Easton, Pa.	1907
MATHEWS, F. SCHUYLER, 17 Frost St., Cambridge, Mass.	1908
MCATEE, WALDO LEE, Dept. of Agriculture, Washington, D. C.	1903
MCCLINTOCK, NORMAN, 504 Amberson Ave., Pittsburgh, Pa.	1900
MCCONNELL, HARRY B., Box 77, Cadiz, O.	1904
MCCOOK, PHILIP JAMES, 15 William St., New York City.	1895
MC EWEN, DANIEL C., 160 Stirling Pl., Brooklyn, N. Y.	1901
MC HATTON, Dr. HENRY, Macon, Ga.	1898
MCILHENNY, EDWARD AVERY, Avery Island, La.	1894
MCINTIRE, Mrs. HERBERT BRUCE, 4 Garden St., Cambridge, Mass.	1908
MC KECHNIE, FREDERICK BRIDGHAM, Ponkapog, Mass.	1900
McLAIN, ROBERT BAIRD, Market and 12th Sts., Wheeling, W. Va.	1893
McMILLAN, Mrs. GILBERT, Gorham, N. H.	1902
MEAD, Mrs. E. M., 2465 Broadway, New York City.	1904
MEEKER, JESSE C. A., 51 Washington Ave., Danbury, Conn.	1899
MERRIAM, CHARLES, Weston, Mass.	1908

MERRIAM, HENRY F., 94 New England Ave., Summit, N. J.....	1905
MERRILL, HARRY, Bangor, Maine.....	1883
MERSHON, W. B., Saginaw, Mich.....	1905
METCALF, WILLARD L., 33 West 67th St., New York City.....	1908
MILLER, JAMES HENRY, Lowville, N. Y.....	1904
MILLS, HARRY C., Box 218, Unionville, Conn.....	1897
MILLS, Prof. WILLIAM C., Ohio State Univ., Columbus, O.....	1900
MITCHELL, Dr. WALTON I., 321 Barnes Bldg., Wichita, Kan.....	1893
MONTGOMERY, THOMAS H., Jr., Univ. of Penn., Philadelphia, Pa.....	1899
MOORE, Miss ELIZ. PUTNAM, 70 West 11th St., New York City.....	1905
MOORE, ROBERT THOMAS, W. Main St., Haddonfield, N. J.....	1898
MORCOM, G. FREAN, 1815 N. Raymond Ave., Pasadena, Cal.....	1886
MORGAN, ALBERT, 125 Trumbull St., Hartford, Conn.....	1903
MORSE, Miss MARGARET, Clark University, Worcester, Mass.....	1907
MOSHER, FRANKLIN H., 17 Highland Ave., Melrose, Mass.....	1905
MURPHEY, Dr. EUGENE E., 444 Tellfair St., Augusta, Ga.....	1903
MURPHY, ROBERT C., Brown Univ., Providence, R. I.....	1905
MYERS, Mrs. HARRIET W., 306 Ave. 66, Los Angeles, Cal.....	1906
MYERS, Miss LUCY F., Brookside, Poughkeepsie, N. Y.....	1898
NASH, C. W., 94 Lee Ave., Toronto, Ont.....	1906
NASH, HERMAN W., Box 264, Pueblo, Colo.....	1892
NASH, NATHANIEL C., Jr., Hastings 36, Cambridge, Mass.....	1907
NELSON, EMORY E., 531 Grain Exchange, Winnipeg, Canada.....	1908
NELSON, JAMES ALLEN, Bureau of Entomology, Washington, D. C...	1898
NEWHALL, DANIEL S., Strafford, Chester Co., Pa.....	1908
NEWMAN, Rev. STEPHEN M., Eastern College, Front Royal, Va.....	1898
NICHOLS, JOHN M., 46 Spruce St., Portland, Me.....	1890
NICHOLS, JOHN TREADWELL, 42 W. 11th St., New York City.....	1901
NOLTE, Rev. FELIX, St. Benedict's College, Atchison, Kan.....	1903
NORRIS, J. PARKER, Jr., care of Evening Bulletin, Philadelphia, Pa.	1904
NORRIS, ROY C., 301 West 18th St., Richmond, Ind.....	1904
NOWELL, JOHN ROWLAND, Box 979, Schenectady, N. Y.....	1897
O'CONNOR, HALDEMAN, 25 N. Front St., Harrisburg, Pa.....	1896
OGDEN, Dr. HENRY VINING, 141 Wisconsin St., Milwaukee, Wis....	1897
OLDYS, HENRY, Dept. of Agriculture, Washington, D. C.....	1896
*OLIVER, Dr. HENRY KEMBLE, 2 Newbury St., Boston, Mass.....	1900
OWEN, Miss JULIETTE AMELIA, 306 N. 9th St., St. Joseph, Mo.....	1897
PAINE, AUGUSTUS G., Jr., 18 West 49th St., New York City.....	1886
PANGBURN, CLIFFORD H., 731 Elm St., New Haven, Conn.....	1907
PARKER, Hon. HERBERT, S. Lancaster, Mass.....	1904
PAUL, LUCIUS H., 59 West Miller St., Newark, New York.....	1908
PEABODY, Rev. P. B., Blue Rapids, Kan.....	1903
PEARSE, THEED, Ivy, Va.....	1907
PEARSON, LEONARD S., 132 Beechtree Lane, Wayne, Pa.....	1907
PEAVEY, ROBERT W., 791 Coney Island Ave., Brooklyn, N. Y.....	1903
PEET, MAX M., Alpha Kappa Kappa House, 1001 Huron St., Ann Arbor, Mich.....	1907

PERRY, DR. ELTON, 610 Baylor St., Austin, Tex.....	1902
PETERS, ALBERT S., State Bank, Lake Wilson, Minn.....	1908
PETERS, JAMES LEE, Walnut Ave., Jamaica Plain, Mass.....	1904
PHILIPP, PHILIP B., 51 West 85th St., New York City.....	1907
PHILLIPS, ALEXANDER H., Princeton, N. J.....	1891
PHILLIPS, JOHN CHARLES, 299 Berkeley St., Boston, Mass.....	1904
PHILLIPS, SHERMAN E., Canterbury, N. H.....	1904
PIERCE, A. K., Renovo, Pa.....	1891
PIPER, MRS. FRANCIS, 10 Harvard St., Arlington Heights, Mass.....	1908
PITCAIRN, WILLIAM G., 3330 Perrysville Ave., Allegheny, Pa.....	1906
POE, MISS MARGARETTA, 1500 Park Ave., Baltimore, Md.....	1899
POLLOCK, ADELAIDE L., Queen Anne School, Seattle, Wash.....	1906
POMEROY, HARRY KIRKLAND, Box 575, Kalamazoo, Mich.....	1894
POPE, ALEXANDER, 1013 Beacon St., Brookline, Mass.....	1908
PORTER, LOUIS H., Stamford, Conn.....	1893
PRAEGER, WILLIAM E., 421 Douglas Ave., Kalamazoo, Mich.....	1892
PRICE, ARTHUR E., Grant Park, Ill.....	1908
PRICE, JOHN HENRY, Crown W Ranch, Knowlton, Mont.....	1906
PURDY, JAMES B., R. F. D. No. 4, Plymouth, Mich.....	1893
RAVEN, HENRY C., Bay Shore, N. Y.....	1908
RAWLE, FRANCIS W., Lock Box 51, Bryn Mawr, Pa.....	1907
RAWSON, CALVIN LUTHER, R. F. D. No. 2, Putnam, Conn.....	1885
READ, ALBERT M., 1140 15th St. N. W., Washington, D. C.....	1895
REAGH, DR. ARTHUR LINCOLN, 39 Maple St., West Roxbury, Mass....	1896
REDFIELD, ALFRED C., Wayne, Pa.....	1907
REDFIELD, MISS ELISA WHITNEY, 29 Everett St., Cambridge, Mass....	1897
REDINGTON, ALFRED POETT, Box 66, Santa Barbara, Cal.....	1890
REED, CHESTER A., 75 Thomas St., Worcester, Mass.....	1904
REED, MISS EMILY E., 12 Louisburg Sq., Boston, Mass.....	1904
REED, HUGH DANIEL, 108 Brandon Place, Ithaca, N. Y.....	1900
REED, MRS. WILLIAM HOWELL, Belmont, Mass.....	1904
REHN, JAMES A. G., Acad. Nat. Sciences, Philadelphia, Pa.....	1901
REMINGTON, CHARLES H., 216 Waterman Ave., East Providence, R. I.	1908
RHOADS, CHARLES J., Bryn Mawr, Pa.....	1895
RICHARDS, MISS HARRIET E., 36 Longwood Ave., Brookline, Mass....	1900
RICHARDSON, C. H., Jr., Stanford University, Cal.....	1903
RICHARDSON, JOHN KENDALL, Wellesley Hills, Mass.....	1896
RIDGWAY, JOHN L., Chevy Chase, Md.....	1890
RIKER, CLARENCE B., Maplewood, N. J.....	1885
ROBERTS, JOHN T., JR., 350 Main St., Buffalo, N. Y.....	1906
ROBERTS, WILLIAM ELY, George School, Bucks Co., Pa.....	1902
ROBINSON, ANTHONY W., 409 Chestnut St., Philadelphia, Pa.....	1903
ROBINSON, DR. PHILIP E., 102 Huntington Ave., Boston, Mass.....	1908
RODDY, Prof. H. JUSTIN, State Normal School, Millersville, Pa.....	1891
ROE, CHARLES M., Battle Creek, Mich.....	1906
ROGERS, CHARLES H., 109 Patton Hall, Princeton, N. J.....	1904

ROOSEVELT, FRANKLIN DELANO, Hyde Park, N. Y.....	1896
ROSS, GEORGE H., 23 West St., Rutland, Vt.....	1904
ROWLEY JOHN, 505 Everett Ave., Palo Alto, Cal.....	1889
SABINE, GEORGE K., 30 Irving St., Brookline, Mass.....	1903
SAGE, HENRY M., Menands Road, Albany, N. Y.....	1885
SALLEY, FITZHUGH, Charleston Museum, Charleston, S. C.....	1907
SANDS, AUSTIN LEDYARD, Greenough Place, Newport, R. I.....	1902
SANFORD, HARRISON, 65 W. 50th St., New York City.....	1905
SANFORD, Dr. LEONARD C., 216 Crown St., New Haven, Conn.....	1902
SANTENS, JOSEPH A., Carnegie Museum, Pittsburgh, Pa.....	1907
SASS, HERBERT RAVENEL, 23 Legare St., Charleston, S. C.....	1906
SATTERTHWAIT, A. F., Office of State Zoölogist, Harrisburg, Pa.....	1907
SAUNDERS, ARETAS A., care of Forest Service, Bozeman, Mont.....	1907
SAVAGE, WALTER GILES, Monteer, Mo.....	1898
SCHANTZ, ORPHEUS M., Morton Park, Ill.....	1907
SCHMUCKER, Dr. S. C., Rosedale Ave., West Chester, Pa.....	1903
SEABURY, JOSEPH S., Wellesley Hills, Mass.....	1906
SEISS, COVINGTON FEW, 1338 Spring Garden St., Philadelphia, Pa..	1898
SHANNON, WM. PURDY, 1170 Broadway, New York City.....	1908
SHARPLES, ROBERT P., West Chester, Pa.....	1907
SHATTUCK, EDWIN HAROLD, Box 48, Granby, Conn.....	1898
SHAW, WILLIAM T., 600 Linden Ave., Pullman, Wash.....	1908
SHEARER, AMON R., Mont Belvieu, Tex.....	1905
*SHERMAN, Miss ALTHEA R., National, Iowa.....	1907
SHIRAS, GEORGE, 3d, Stoneleigh Court, Washington, D. C.....	1907
SHOEMAKER, FRANK H., 2960 Dewey Ave., Omaha, Neb.....	1895
SHROSBREE, GEORGE, Public Museum, Milwaukee, Wis.....	1899
SHUMWAY, GEORGE, Galesburg, Ill.....	1906
SILLIMAN, HARPER, 562 5th Ave., New York City.....	1902
SMITH, BYRON L., 2140 Prairie Ave., Chicago, Ill.....	1906
SMITH, Rev. FRANCIS CURTIS, Boonville, N. Y.....	1903
SMITH, HORACE G., Capitol Bldg., Denver, Colo.....	1888
SMITH, Dr. HUGH M., 1209 M St. N. W., Washington, D. C.....	1886
SMITH, JESSE L., 141 South 2nd St., Highland Park, Ill.....	1907
SMITH, LOUIS IRVIN, Jr., 3809 Chestnut St., Philadelphia, Pa.....	1901
SMITH, N. A. C., Wellesley Hills, Mass.....	1907
SMITH, PHILO W., JR., Box 285, Eureka Springs, Ark.....	1903
SMYTH, Prof. ELLISON A., Jr., Polytechnic Inst., Blacksburg, Va....	1892
SNYDER, WILL EDWIN, 109 E. Mackie St., Beaver Dam, Wis.....	1895
SPAULDING, FRED B., Lancaster, N. H.....	1894
STANTON, Prof. J. Y., 410 Main St., Lewiston, Me.....	1883
STEBBINS, Miss FANNIE A., 480 Union St., Springfield, Mass.....	1903
STEELE, JOHN H., 4008 Spruce St., West Philadelphia, Pa.....	1906
STEVENS, CAROLINE M., 52 Bowdoin St., Portland, Me.....	1906
STEVENS, Dr. J. F., Lock Box 546, Lincoln, Neb.....	1908
STILES, EDGAR C., 345 Main St., West Haven, Conn.....	1907

STONE, CLARENCE F., Branchport, N. Y.....	1903
STONE, NATHAN F., Shrewsbury, Mass.....	1908
STRATTON-PORTER, MRS. GENE, Limberlost Cabin, Geneva, Ind.....	1906
STURTEVANT, EDWARD, St. George's School, Newport, R. I.....	1896
STYER, MRS. KATHARINE R., Concordville, Pa.....	1903
SURFACE, Prof. HARVEY ADAM, State Zoölogist, Harrisburg, Pa.....	1897
SWAIN, JOHN MERTON, Box 142, Farmington, Me.....	1899
SWALES, BRADSHAW HALL, Grosse Isle, Mich.....	1902
SWARTH, HARRY S., Univ. of Cal. Mus. of Vert. Zool., Berkeley, Cal.....	1900
SWENK, MYRON H., 318 North 27th St., Lincoln, Neb.....	1904
SWEZEY, GEORGE, 61 Polk St., Newark, N. J.....	1901
SWIFT, CARLETON B., St. Mark's School, Southborough, Mass.....	1907
TAVERNER, PERCY A., 55 Elmhurst Ave., Highland Park, Mich.....	1902
TAYLOR, ALEXANDER R., 1410 Washington St., Columbia, S. C.....	1907
TAYLOR, ALEXANDER O'DRISCOLL, 132 Bellevue Ave., Newport, R. I.....	1888
TAYLOR, THORNE C., Hubbard Woods, Ill.....	1908
TERRILL, LEWIS MCL., 352 Elin Ave., Westmount, Quebec.....	1907
TEST, CHARLES DARWIN, Golden, Colo.....	1906
TEST, DR. FREDERICK CLEVELAND, 4318 Grand Boulevard Chicago, Ill.....	1892
TEST, LOUIS AGASSIZ, Occidental College, Los Angeles, Cal.....	1908
THOMAS, MISS EMILY HINDS, 2000 Spruce St., Philadelphia, Pa.....	1901
THOMPSON, ROY, University, N. D.....	1905
THORNE, SAMUEL, 43 Cedar St., New York City.....	1908
TINKER, ALMERIN D., 631 S. 12th St., Ann Arbor, Mich.....	1907
TOPPAN, GEORGE L., 723 11th St. N. W., Washington, D. C.....	1886
TOWER, MRS. KATE DENIG, Hotel Bristol, Boston, Mass.....	1908
TOWNSEND, WILMOT, 272 75th St., Brooklyn, N. Y.....	1894
TREGANZA, A. O., 610 Utah Saving's & Trust Bldg., Salt Lake City, Utah.....	1906
TROTTER, WILLIAM HENRY, 36 N. Front St., Philadelphia, Pa.....	1899
TRUMBULL, J. H., Plainville, Conn.....	1907
TUCKER, DR. HENRY, 2000 Pine St., Philadelphia, Pa.....	1907
TUDBURY, WARREN C., 8 Mall St., Salem, Mass.....	1903
TUFTS, LE ROY MELVILLE, Thrushwood, Farmington, Me.....	1903
TUTTLE, DR. ALBERT H., 350 Charles River Road, Cambridge, Mass.....	1908
TUTTLE, DR. CARL, Berlin Heights, Ohio.....	1890
TWEEDY, EDGAR, 404 West 115th St., New York City.....	1902
UNDERWOOD, WILLIAM LYMAN, Mass. Inst. Technology, Boston, Mass.....	1900
UPHAM, MRS. WILLIAM H., 212 3rd Ave., Marshfield, Wis.....	1907
VALENTINE, MISS ANNA J., Bellefonte, Pa.....	1905
VALENTINE, MISS LUCY W., 2 Trowbridge Terrace, Cambridge, Mass.....	1908
VAN CORTLANDT, MISS ANNE S., Croton-on-Hudson, N. Y.....	1885
VAN NAME, WILLARD GIBBS, 121 High St., New Haven, Conn.....	1900
VAN SANT, MISS ELIZABETH, 2960 Dewey Ave., Omaha, Neb.....	1896

VANTASSELL, F. L., 116 High St., Passaic, N. J.	1907
VARICK, Mrs. WILLIAM REMSEN, 1015 Chestnut St., Manchester, N. H.	1900
VETTER, Dr. CHARLES, 50 Central Park West, New York City.	1898
VON LINGERKE, JUSTUS, 349 Fifth Ave., New York City.	1907
VON ROSSEM, ADRIAN, La Casa Grande, Pasadena, Cal.	1908
VROOMAN, ISAAC H., Jr., 282 Hamilton St., Albany, N. Y.	1908
WADSWORTH, CLARENCE S., 37 Washington St., Middletown, Conn.	1906
WALES, EDWARD H., Hyde Park, N. Y.	1896
WALES, Miss ELLA, 186 Columbia Road, Dorchester, Mass.	1908
WALKER, Dr. R. L., 355 Main Ave., Carnegie, Pa.	1888
WALLACE, Dr. A. H., 204 Bellevue Ave., Upper Montclair, N. J.	1907
WALLACE, JAMES S., 69 Front St., Toronto, Ontario.	1907
WALTER, HERBERT E., Dr., 53 Arlington Ave., Providence, R. I.	1901
WALTERS, FRANK, South Sandisfield, Mass.	1902
WARD, FRANK HAWLEY, N. Y. State Museum, Albany, N. Y.	1908
WARD, HENRY L., 882 Hackett Ave., Milwaukee, Wis.	1906
WARNER, GOODWIN, 7 Hampden Hall, Cambridge, Mass.	1908
WARREN, Dr. B. H., 236 W. Market St., West Chester, Pa.	1885
WARREN, EDWARD ROYAL, 20 W. Caramillo St., Colorado Springs, Colo.	1902
WATSON, Miss SARAH R., The Cresheim Arms, Allen's Lane, German- town, Philadelphia, Pa.	1900
WEBER, J. A., Box 216, Palisades Park, N. J.	1907
WEIR, J. ALDEN, 471 Park Ave., New York City.	1899
WELLMAN, GORDON B., 54 Beltran St., Malden, Mass.	1908
WELLS, FRANK S., 916 Grant Ave., Plainfield, N. J.	1902
WENTWORTH, IRVING H., Matehuala, S. L. P., Mexico.	1900
WESTON, FRANCIS M., Jr., care P. G. Porcher, Mt. Pleasant, S. C.	1907
WETMORE, ALEXANDER, care of Museum, Lawrence, Kansas.	1908
WETMORE, Mrs. EDMUND, 343 Lexington Ave., New York City.	1902
WEYGANDT, CORNELIUS, Wissahickon Ave. below Westview St., Ger- mantown, Philadelphia, Pa.	1907
WHARTON, WILLIAM P., Groton, Mass.	1907
WHEELER, EDMUND JACOB, 177 Pequot Ave., New London, Conn.	1898
WHEELER, JOHN B., East Templeton, Mass.	1897
WHELOCK, Mrs. IRENE G., 1040 Hinman Ave., Evanston, Ill.	1902
WHITE, FRANCIS BEACH, St. Paul's School, Concord, N. H.	1891
WHITE, GEORGE R., Dead Letter Office, Ottawa, Ont.	1903
WHITE, W. A., 158 Columbia Heights, Brooklyn, N. Y.	1902
WHITEHEAD, ELY L., 712 Michigan Ave., Evanston, Ill.	1908
WICKERSHAM, CORNELIUS W., Hastings 2, Cambridge, Mass.	1902
WILBUR, ADDISON P., 60 Gibson St., Canandaigua, N. Y.	1895
WILCOX, Miss ALICE W., 165 Prospect St., Providence, R. I.	1908
WILCOX, Dr. EMMA D., 307 W. 98th St., New York City.	1905
WILCOX, T. FERDINAND, 115 W. 75th St., New York City.	1895
WILDE, MARK L. C., 311 N. 5th St., Camden, N. J.	1893

WILLARD, BERTEL G., Box 107, Millis, Mass.....	1906
WILLIAMS, HARRY C., 5005 Cabanne Ave., St. Louis, Mo.....	1908
WILLIAMS, J. BICKERTON, Biological Museum, Queen's Park, Toronto, Ontario.....	1889
WILLIAMS, RICHARD FERDINAND, Box 521, New York City.....	1902
WILLIAMS, ROBERT S., New York Botanical Gardens, Bronx Park, New York City.....	1888
WILLIAMS, ROBERT W., Jr., U. S. Dept. Agriculture, office of the Solicitor, Washington, D. C.....	1900
WILLIAMSON, E. B., Bluffton, Ind.....	1900
WILSON, SIDNEY S., German American Bank Bldg., St. Joseph, Mo...	1895
WING, HENRY A., 505 S. 6th St., Maywood, Ill.....	1908
WISLER, J. JAY, 231 Cherry St., Columbia, Pa.....	1903
WISTER, WILLIAM ROTCH, 505 Chestnut St., Philadelphia, Pa.....	1904
WITHERBEE, MRS F. B., 106 Berkeley St., West Newton, Mass.....	1906
WOOD, J. CLAIRE, 179 17th St., Detroit, Mich.....	1902
WOOD, NELSON R., Smithsonian Institution, Washington, D. C....	1895
WOOD, NORMAN A., 1216 S. University Ave., Ann Arbor, Mich.....	1904
WOODCOCK, ARTHUR ROY, Corvallis, Oregon.....	1901
WOODRUFF, FRANK M., Acad. Sciences, Chicago, Ill.....	1904
WOODRUFF, LEWIS B., 14 E. 68th St., New York City.....	1886
WOODWORTH, MRS. NELLY HART, 41 Bank St., St. Albans, Vt.....	1894
WORCESTER, MRS. ALFRED, Bacon St., Waltham, Mass.....	1908
WORTHEN, CHARLES K., Box 103, Warsaw, Ill.....	1891
WORTHINGTON, WILLIS W., Shelter Island Heights, N. Y.....	1889
WRIGHT, ALBERT H., 804 E. Seneca St., Ithaca, N. Y.....	1906
WRIGHT, MISS HARRIET H., 1637 Gratiot Ave., Saginaw, W. S., Mich.	1907
WRIGHT, HORACE WINSLOW, 82 Myrtle St., Boston, Mass.....	1902
WRIGHT, HOWARD W., 830 N. Orange Grove Ave., Pasadena, Cal....	1907
WRIGHT, SAMUEL, Conshohocken, Pa.....	1895
WYMAN, LUTHER E., 1959 Washington Boulevard, Chicago, Ill.....	1907
YOUNG, JOHN A., Calder Villa, Bridge of Allan, Scotland.....	1907
YOUNG, MRS. WILLIAM A., 54 Temple St., West Newton, Mass.....	1907
ZAPPEY, WALTER R., 19 Norfolk St., Roslindale, Mass.....	1905
ZERRAHN, CARL OTTO, 106 Centre St., Milton, Mass.....	1904
ZIMMER, J. T., Univ. State Farm, Lincoln, Neb.....	1908

DECEASED MEMBERS.

FELLOWS.

	<i>Date of Death</i>
ALDRICH, CHARLES.....	March 8, 1908
BAIRD, SPENCER FULLERTON.....	Aug. 19, 1887
BENDIRE, CHARLES EMIL.....	Feb. 4, 1897
COUES, ELLIOTT.....	Dec. 25, 1899
GOSS, NATHANIEL STICKNEY.....	March 10, 1891
HOLDER, JOSEPH BASSETT.....	Feb. 28, 1888
JEFFRIES, JOHN AMORY.....	March 26, 1892
McILWRAITH, THOMAS.....	Jan. 31, 1903
MERRILL, JAMES CUSHING.....	Oct. 27, 1902
SENNETT, GEORGE BURRITT.....	March 18, 1900
TRUMBULL, GURDON.....	Dec. 28, 1903
WHEATON, JOHN MAYNARD.....	Jan. 28, 1887

HONORARY FELLOWS.

BLANFORD, WILLIAM THOMAS.....	June 23, 1905
BOCAGE, J. V. BARBOZA DU.....	July, 1908
BURMEISTER, HERMANN.....	May 1, 1892
CABANIS, JEAN.....	Feb. 20, 1906
GÄTKE, HEINRICH.....	Jan. 1, 1897
GUNDLACH, JUAN.....	March 14, 1896
GURNEY, JOHN HENRY.....	April 20, 1890
HARTLAUB, GUSTAV.....	Nov. 20, 1900
HUXLEY, THOMAS HENRY.....	June 29, 1895
KRAUS, FERDINAND.....	Sept. 15, 1890
LAWRENCE, GEORGE NEWBOLD.....	Jan. 17, 1895
MILNE-EDWARDS, ALPHONSE.....	April 21, 1900
NEWTON, ALFRED.....	June 7, 1907
PARKER, WILLIAM KITCHEN.....	July 3, 1890
PELZELN, AUGUST VON.....	Sept. 2, 1891
SALVIN, OSBERT.....	June 1, 1898
SAUNDERS, HOWARD.....	Oct. 20, 1907
SCHLEGEL, HERMANN.....	Jan. 17, 1884
SEEBOHM, HENRY.....	Nov. 26, 1895
TACZANOWSKI, LADISLAS.....	Jan. 17, 1890

CORRESPONDING FELLOWS.

ALTUM, C. A.....	Jan. 1, 1900
ANDERSON, JOHN.....	Aug. 16, 1900
BALDAMUS, EDUARD.....	Oct. 30, 1893
BLAKISTON, THOMAS WRIGHT.....	Oct. 15, 1891
BLASIUS, RUDOLPH.....	Sept. 21, 1907
BOGDANOW, MODEST NIKOLAEVICH.....	March 4, 1888
BRYANT, WALTER, E.....	May 21, 1905
BULLER, WALTER LAWRY.....	July 19, 1906
COOPER, JAMES GRAHAM.....	July 19, 1902
CORDEAUX, JOHN.....	Aug. 1, 1899
DAVID, ARMAND.....	Nov. 10, 1900
FATIO, VICTOR.....	March 19, 1906
HAAST, JULIUS VON.....	Aug. 15, 1887
HARGITT, EDWARD.....	March 19, 1895
HOLUB, EMIL.....	Feb. 21, 1902
HOMeyer, EUGEN FERDINAND VON.....	May 31, 1889
LAYARD, EDGAR LEOPOLD.....	Jan. 1, 1900
LEVERKÜHN, PAUL.....	Dec. 5, 1905
LYTTLETON, THOMAS, LORD LILFORD.....	June 17, 1896
MARSCHALL, AUGUST FRIEDRICH.....	Oct. 11, 1887
MALMGREN, ANDERS JOHAN.....	April 12, 1897
MIDDENDORFF, ALEXANDER THEODORE VON.....	Jan. 28, 1894
MOSJISOVICS, FELIX G. HERMANN AUGUST.....	Aug. 27, 1897
OUSTALET, EMILE.....	Oct. 23, 1905
PHILIPPI, R. A.....	Aug. — 1904
PREJEVALSKI, NICOLAS MICHAELOVICH.....	Oct. 20, 1887
PRENTISS, DANIEL WEBSTER.....	Nov. 19, 1899
PRYER, HARRY JAMES STOVIN.....	Feb. 17, 1888
RADDE, GUSTAV FERDINAND.....	— 1903
SCHRENCK, LEOPOLD VON.....	Jan. 20, 1894
SÉLEYS-LONGSCHAMPS, EDMOND DE.....	Dec. 11, 1900
SEVERTZOW, NICOLAI ALEKSEWICH.....	Feb. 8, 1885
STEVENSON, HENRY.....	Aug. 18, 1888
TRISTRAM, H. B.....	March 8, 1906
WHARTON, HENRY T.....	Sept. —, 1895
WOODHOUSE, SAMUEL W.....	Oct. 23, 1904

MEMBERS.

FANNIN, JOHN.....	June 20, 1904
JUDD, SYLVESTER DWIGHT.....	Oct. 22, 1905
RALPH, WILLIAM LEGRANGE.....	July 8, 1907

ASSOCIATES.

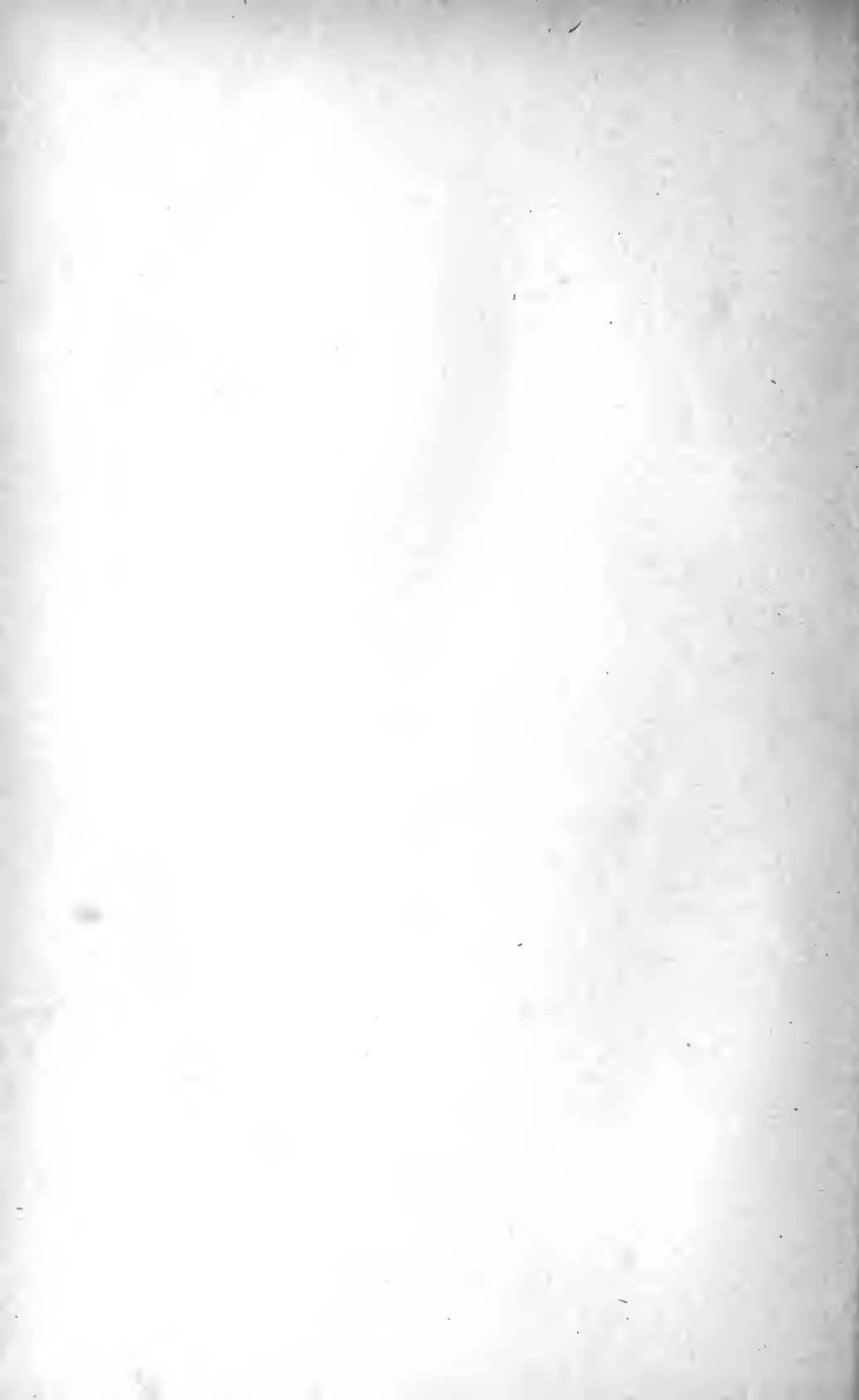
ADAMS, CHARLES F.....	May 20, 1893
ALLEN, CHARLES SLOVER.....	Oct. 15, 1893
ANTES, FRANK T.....	Feb. 6, 1907
ATKINS, HARMON ALBRO.....	May 19, 1885
AVERY, WILLIAM CUSHMAN.....	March 11, 1894
BAILEY, CHARLES E.....	—, 1905
BARLOW, CHESTER.....	Nov. 6, 1902
BAUR, GEORGE.....	June 25, 1898
BECKHAM, CHARLES WICKLIFFE.....	June 8, 1888
BILL, CHARLES.....	April —, 1897
BIRTWELL, FRANCIS JOSEPH.....	June 29, 1901
BOARDMAN, GEORGE AUGUSTUS.....	Jan. 11, 1901
BOLLES, FRANK.....	Jan. 10, 1894
BRACKETT, FOSTER H.....	Jan. 5, 1900
BREESE, WILLIAM LAWRENCE.....	Dec. 7, 1889
BRENINGER, GEORGE FRANK.....	Dec. 3, 1905
BRENNAN, CHARLES F.....	Mar. 21, 1907
BROKAW, LOUIS W.....	Sept. 3, 1897
BROWN, JOHN CLIFFORD.....	Jan. 16, 1901
BROWNE, FRANCIS CHARLES.....	Jan. 9, 1900
BURNETT, LEONARD E.....	March 16, 1904
CAIRNS, JOHN S.....	June 10, 1895
CALL, AUBREY BRENDON.....	Nov. 20, 1901
CAMPBELL, ROBERT ARGYLL.....	April —, 1897
CANFIELD, J. B.....	Feb. 18, 1904
CARLETON, CYRUS.....	Nov. 15, 1907
CARTER, EDWIN.....	— 1900
CARTER, ISABEL PADDOCK.....	Sept. 15, 1907
CHADBOURNE, MRS. ARTHUR PATTERSON.....	Oct. 4, 1908
CLARK, JOHN NATHANIEL.....	Jan. 13, 1903
COE, W. W.....	April 26, 1885
COLBURN, WILLIAM W.....	Oct. 17, 1899
COLLETT, ALONSO M.....	Aug. 22, 1902
CONANT, MRS. THOS. O.....	Dec. 28, 1907
CORNING, ERASTUS, JR.....	April 9, 1893
DAFFIN, WM. H.....	April 21, 1902
DAKIN, JOHN ALLEN.....	Feb. 21, 1900
DAVIS, WALTER R.....	April 8, 1907
DEXTER, NEWTON.....	July 27, 1901
ELLIOTT, SAMUEL LOWELL.....	Feb. 11, 1889
FAIRBANKS, FRANKLIN.....	April 24, 1895
FOWLER, JOSHUA LOUNSBURY.....	July 11, 1899
FULLER, CHARLES ANTHONY.....	Mar. 16, 1906
GESNER, ABRAHAM HERBERT.....	April 30, 1895

Goss, Benjamin Franklin.....	July 6, 1893
Hatch, Jesse Maurice.....	May 1, 1898
Hoadley, Frederick Hodges.....	Feb. 26, 1895
Holmes, LaRue Klingler.....	May 10, 1906
Hoopes, Josiah.....	Jan. 16, 1904
Howland, John Snowdon.....	Sept. 19, 1885
Ingersoll, Joseph Carleton.....	Oct. 2, 1898
Jenks, John Whipple Potter.....	Sept. 27, 1894
Jesurun, Mortimer.....	March —, 1905
Jouy, Pierre Louis.....	March 22, 1894
Kelker, Wm. A.....	Feb. 15, 1908
Knight, Wilbur Clinton.....	July 8, 1903
Knox, John C.....	July 9, 1904
Knox, John Cowing.....	June 1, 1904
Koch, August.....	Feb. 15, 1907
Kumlien, Ludwig.....	Dec. 4, 1902
Kumlien, Thure.....	Aug. 5, 1888
Lawrence, Robert Hoe.....	April 27, 1897
Lee, Leslie Alexander.....	May 20, 1908
Linden, Charles.....	Feb. 3, 1888
Lloyd, Andrew James.....	June 14, 1906
Mabbett, Gideon.....	Aug. 15, 1900
Maitland, Alexander.....	Oct. 25, 1907
Marble, Charles C.....	Sept. 25, 1900
Marcy, Oliver.....	March 19, 1899
Maris, Willard Lorraine.....	Dec. 11, 1895
McKinlay, James.....	Nov. 1, 1899
Mead, George Smith.....	June 19, 1901
Minot, Henry Davis.....	Nov. 13, 1890
Morrell, Clarence Henry.....	July 15, 1902
Nichols, Howard Gardner.....	June 23, 1896
Nims, Lee.....	March 12, 1903
Northrop, John I.....	June 26, 1891
Paddock, Isabel M.....	Sept. 15, 1907
Park, Austin F.....	Sept. 22, 1893
Paulmier, Frederick Clark.....	March 3, 1906
Pomroy, Grace V.....	May 14, 1906
Ragsdale, George Henry.....	March 25, 1895
Ready, George H.....	March 20, 1903
Richardson, Jenness.....	June 24, 1893
Robins, Mrs. Edward.....	July 2, 1906
Sand, Isabella Low.....	April 20, 1906
Selous, Percy Sherborn.....	April 7, 1900
Slater, James H.....	Feb. —, 1895
Slevin, Thomas Edwards.....	Dec. 23, 1902
Small, Edgar Albert.....	April 24, 1884

Deceased Members.

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SMITH, CLARENCE ALBERT.....	May 6, 1896
SNOW, FRANCIS HUNTINGTON.....	Sept. 20, 1908
SOUTHWICK, JAMES MORTIMER.....	June 3, 1904
STOWE, W. H.....	March—, 1895
SWEIGER, MRS. J. L.....	March 23, 1907
THOMPSON, MILLET T.....	Aug. 7, 1907
THORNE, PLATTE MARVIN.....	March 16, 1897
THURBER, EUGENE CARLETON.....	Sept. 6, 1896
VENNOR, HENRY GEORGE.....	June 8, 1884
WATERS, EDWARD STANLEY.....	Dec. 26, 1902
WILLARD, SAMUEL WELLS.....	May 24, 1887
WOOD, WILLIAM.....	Aug. 9, 1885
WOODRUFF, EDWARD SEYMOUR.....	Jan. 15, 1909
YOUNG CURTIS CLAY.....	July 30, 1902



Old
Series,
Vol. XXXIV

CONTINUATION OF THE
BULLETIN OF THE NUTTALL ORNITHOLOGICAL CLUB

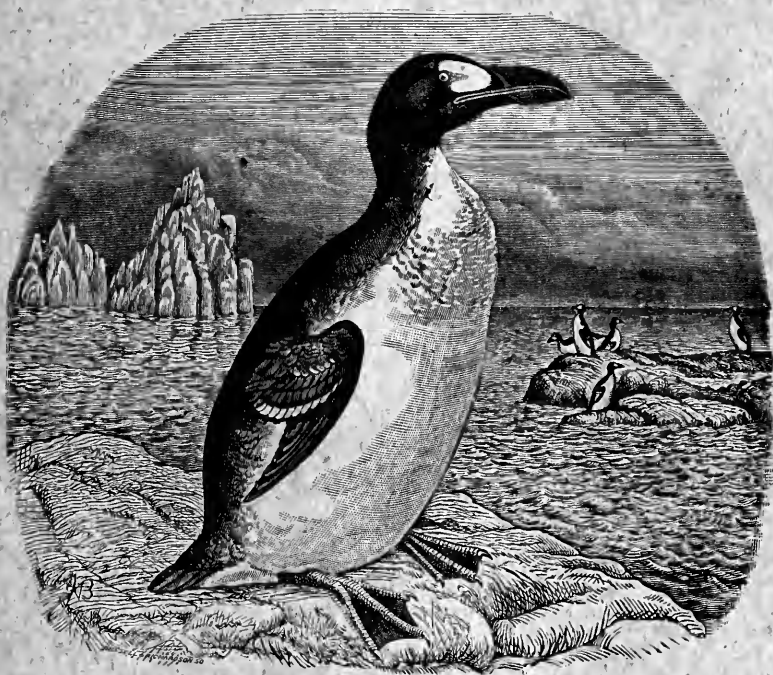
New
Series,
Vol. XXVI

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No. 1



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VOL. XXVI.

JANUARY, 1909.

No. 1.

NOTES ON THE OCCURRENCE OF THE YELLOW RAIL IN MICHIGAN.¹

BY NORMAN A. WOOD.

THE YELLOW RAIL (*Coturnicops noveboracensis*) has so seldom been recorded from Michigan that, as I have recently obtained some additional data on its occurrence in the State, it seems advisable to publish these in connection with a review of the literature on the subject. In Michigan, as in the neighboring territory, owing to its rareness, secretiveness, or both, very little is known of the habits or local distribution of this species.

The first record is that of Abraham Sager (1839, p. 416), who gives it in his list of Michigan birds under the old name of *Rallus noveboracensis* Bon. It was next recorded by Manly Miles (1861, p. 230) in his list of Michigan birds as *Porzana noveboracensis* Bd. Neither of these writers give definite locality records.

In 1875 Major A. H. Boies (1875), of Hudson, Michigan, published a list of the 'Birds of Southern Michigan' in which he gives this species as a "summer sojourner." I have recently written Major Boies concerning this record and he has replied as follows: "The Yellow Rail referred to in my Catalogue, Birds of Southern Michigan, was taken by me in the summer of 1865, and being a female—adult—I gave it as a summer sojourner."

In his paper, 'The Migration of Michigan Birds,' Dr. J. B. Steere (1881, p. 123) includes the "Little Yellow Rail" in the list of birds nesting in Michigan and wintering to the south, but gives

¹ From the University Museum, University of Michigan, Ann Arbor.

no localities; and the same is true of Gibbs's paper, 'Annotated List of Michigan Birds' (1879, p. 493), in which he says of this species: "Rather rare, occasionally taken in spring, probably breeds." The last named writer in an article (1890, p. 230) on the Yellow Rail in Michigan says: "Never until now has my acceptance of the bird as a Michigan species been verified by myself. At dusk on Oct. 19, 1890, as two hunters of renown of this city (Kalamazoo), Messrs. O'Byrne and Francoise, were returning from a snipe shoot they flushed an immature specimen of this interesting little bird from thick grass on low land near water. Noticing it flew peculiarly and was a bird new to them they shot it and gave it to me. One mark they noted in particular which may be a point of identification when the bird is on the wing — the white spot on secondaries is plainly to be seen. They say that the bird sprung up with more vigor and flew swifter than the other rails." This specimen is now in the collection of the University of Michigan Museum.

In A. B. Covert's manuscript notes, now in the University of Michigan Museum, there is a short note on this species as follows: "Sept. 13, 1877, nine specimens were shot near Ann Arbor, of which one was secured by myself, and is now in the University Museum. Rest made a dinner for hunter." This specimen cannot be found, but there is little doubt as to the validity of the record. In his list of the birds of Washtenaw County, Mr. Covert (1881, p. 191) writes of the species as follows: "*Porzana noveboracensis*: a rare migrant."

In reply to a letter requesting additional data on the occurrence of the species within our limits, Prof. Walter B. Barrows, Michigan Agricultural College, has kindly sent me the following notes: "One or two were taken in muskrat traps at Vicksburg, Michigan, by D. Corwin of that place; another specimen was picked up mutilated and too much decomposed for preservation, in the center of Kalamazoo City, about the middle of Sept., 1900. This specimen was doubtless killed by flying against the telephone wires (Dr. M. Gibbs, The Bittern, Grand Rapids, 1901, p. 4). Dr. Gibbs also records another specimen taken in autumn (date not specified) near Kalamazoo, by Wm. O'Byrne (Bull. Mich. Orn. Club, II, 1898, p. 7) [probably the same specimen referred to by Gibbs (1890, p. 230)]; and there is a mounted specimen in the

Barron collection at Niles, which was examined by the writer in November, 1905. This specimen has no label, but undoubtedly was taken in the vicinity.

"Jerome Trombley, Petersburg, Mich., has a set of four eggs, which in size and coloration meet perfectly the requirements for this species, and which were taken May 29, 1894, in the township of Ida, Monroe County, Mich. Mr. Trombley did not take the eggs himself, but his collector described the bird which was flushed from the nest, and his description tallied well with that of the Yellow Rail. The situation was in a large cranberry marsh, and the nest was fastened to the tops of the long marsh-grass, the bottom resting on, or just reaching, the water. It was composed entirely of marsh-grass. Mr. Trombley says: 'From the size and appearance of both the bird and eggs the evidence is fairly conclusive, although it is not absolutely certain that the bird was a Yellow Rail.'"

An unpublished record for the State is that of Mr. Arthur G. Baumgartel of Grand Rapids, Michigan. He has lately written me in regard to the notes referred to as follows: "I have your letters of the 2nd inst. with reference to the occurrence of the Yellow Rail in Michigan. The pair of Yellow Rail mentioned was taken by me in 1896 in the marsh north of Holland (Ottawa Co.), Michigan. The male on April 21st and the female on April 28th. These birds are now in the Hope College Museum at Holland, [Michigan]. On one of these dates I took a third specimen but it fell in a very boggy place and my young dog, in his hurry to retrieve, jumped on the bird, sinking it into the mud beyond recovery."

In the collection of Mr. Percy A. Taverner of Highland Park, Michigan, is the skin of "a female that was caught alive by a dog on March 25, 1908, north of and just beyond the city (Detroit) limits. Another bird of the same kind was said to have been flushed immediately afterwards but could not be secured. The one taken was presented to me, I endeavored to keep it alive but without success." (Taverner, 1908, p. 327.)

My only experience with this species is as follows: On the morning of Sept. 30, 1908, an adult male in fine plumage was found alive near the Museum, on the University of Michigan campus. When first seen the bird was running about in a bewildered way, and when approached flew away a few feet, but was easily captured.

It was taken to the Zoölogical Department, and in the afternoon was brought alive to the Museum. The bird was very quiet and did not seem to be afraid even when stroked with the hand; it walked quietly about in the shallow box in which it was confined, but was rather droopy. I gave it water in a shallow dish and after I had immersed the bill it raised its head and swallowed; it then drank of its own accord, first dipping its bill in the water, then raising it up in the same manner that a chicken does. The water seemed to revive it, and it appeared to feel quite natural, walking about and pecking at the bottom of the case. It was later fed with small pieces of raw beef which were placed in its bill, but while it swallowed some of these it was not able to pick up food, as the head was injured and the mandibles would not meet. The right eye was also injured, and could not be opened. The bird stepped into the dish of water and acted as though it wished to bathe, but the dish was too small, and I removed it as I did not wish the bird's plumage wet. It was too late and dark to take a photograph, so we waited until about 10 o'clock the following morning, when I placed the bird on a ground nest of the Black-crowned Night Heron and had it photographed. The bird was not as strong as on the evening before and could not stand erect. The bird was in a sitting position with its plumage raised, making it look like a ball of feathers. The bird seemed to be suffering from its injuries and was chloroformed. On skinning it I found a deep cut on the breast, and another across the right eye and side of the head. These injuries were probably caused by the bird striking against wires or buildings while passing through the campus on its migration.

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SOME BIRDS OF BAKER COUNTY, OREGON.

BY STANLEY G. JEWETT.

THE following list of birds was made during a stay in Baker County between March 10 and August 17, 1906, and May 1 to June 2, 1907. Some interesting species were described to the author by hunters and prospectors, but they have been omitted, as no accurate data were secured. Some species, as the Franklin's Grouse and McFarlane's Screech Owl, are residents in adjoining counties.

The section treated in this list is about fifty miles northeast of Baker City in the Powder River Mountains.

The timber consists largely of yellow and black pine, red and white fir, tamarack and spruce. The open dry hillsides are covered with mountain laurel, while in the vicinity of water are to be found cottonwood and willow.

In the identification of many species the author desires to thank Mr. A. W. Anthony of Portland, Oregon; also the United States National Museum for identifying some of the more doubtful species.

1. **Mergus americanus.** AMERICAN MERGANSER.—A pair was seen flying up the creek on March 27.

2. **Actitis macularia.** SPOTTED SANDPIPER.—Seen several times during the summer.

3. **Dendragapus richardsonii.** RICHARDSON'S GROUSE.—Abundant resident; nests in April and May.

4. *Bonasa umbellus umbelloides*. GRAY RUFFED GROUSE.—Common resident, frequenting the heavy undergrowth near the creeks. A nest found on June 10, 1906, contained nine fresh eggs.

5. *Zenaidura macroura*. MOURNING DOVE.—Two seen on July 6. Doves are abundant in the sage-brush country but apparently rare in the timber.

6. *Cathartes aura septentrionalis*. TURKEY VULTURE.—Common all summer. A nest in a cavity of rock, with two small young, was found May 25, 1907.

7. *Accipiter velox*. SHARP-SHINNED HAWK.—Common; breeds.

8. *Accipiter cooperi*. COOPER'S HAWK.—Very common; breeds.

9. *Buteo borealis calurus*. WESTERN RED-TAIL.—Fairly common.

10. *Aquila chrysaëtos*. GOLDEN EAGLE.—Seen several times during the summer.

11. *Falco sparverius phalæna*. DESERT SPARROW HAWK.—Common all summer. One pair raised a brood in the same tree with a pair of Pileated Woodpeckers.

12. *Pandion haliaëtus carolinensis*. AMERICAN OSPREY.—Seen but once, on June 20, 1906.

13. *Bubo* sp. GREAT HORNED OWL.—Notes of *Bubo* were often heard during the night, but as no specimens were taken the subspecies was not determined.

14. *Ceryle alcyon*. BELTED KINGFISHER.—Common; breeds.

15. *Dryobates villosus monticola*. ROCKY MOUNTAIN Hairy WOODPECKER.—Abundant resident in the thick fir and pine groves.

16. *Xenopicus albolarvatus*. WHITE-HEADED WOODPECKER.—Common resident, nesting in the tops of dead pines.

17. *Picoides arcticus*. ARCTIC THREE-TOED WOODPECKER.—Seen but once, May 29, 1906.

18. *Sphyrapicus varius nuchalis*. RED-NAPED SAPSUCKER.—One male taken on April 28, 1906; no more seen until August 2, 1906, when I saw a female and one young.

19. *Sphyrapicus thyroides*. WILLIAMSON'S SAPSUCKER.—Common all summer, nesting in the tall pines on the high ridges.

20. *Phloeotomus pileatus abieticola*. NORTHERN PILEATED WOODPECKER.—Common resident; several nests seen in dead pines, ranging from twenty to seventy feet up.

21. *Asyndesmus lewisi*. LEWIS'S WOODPECKER.—Common enough on the edge of the timber but rarely found far from the open plains.

22. *Phalænoptilus nuttalli*. POOR-WILL.—Mr. A. W. Anthony often heard notes of the Poor-will at Sparta.

23. *Chordeiles virginianus henryi*. WESTERN NIGHT HAWK.—Abundant summer resident.

24. *Chaetura vauxi*. VAUX'S SWIFT.—Fairly common during June and July.

25. *Stellula calliope*. CALLIOPE HUMMINGBIRD.—This beautiful little

hummer was common everywhere. Three nests found were in fir trees, ranging from four to seven feet up. One nest was found in some moss hanging over rocks.

26. *Selasphorus rufus*. RUFOUS HUMMINGBIRD.—Fairly common during May, 1907, but absent the year before.

27. *Tyrannus tyrannus*. KINGBIRD.—The common eastern Kingbird is common all over Eastern Oregon.

28. *Tyrannus verticalis*. ARKANSAS KINGBIRD.—Equally as common as the former.

29. *Sayornis saya*. SAY'S PHOEBE.—Fairly common.

30. *Nuttallornis borealis*. OLIVE-SIDED FLYCATCHER.—Fairly common; arrives about April 19.

31. *Empidonax hammondi*. HAMMOND'S FLYCATCHER.—Abundant all summer; nests well up in fir or spruce.

32. *Empidonax wrighti*. WRIGHT'S FLYCATCHER.—Equally common; nests in willows on the hillsides.

33. *Myiochanes richardsoni*. WESTERN WOOD PEWEE.—Fairly common summer resident.

34. *Pica pica hudsonica*. AMERICAN MAGPIE.—Abundant resident; hundreds of their large bulky nests may be seen from the stage road between Baker City and Sparta.

35. *Cyanocitta stelleri annectens*. BLACK-HEADED JAY.—Common resident. A nest found on July 8, 1906, contained four young about a week old; nest eight feet up in a small fir on a hillside.

36. *Perisoreus canadensis capitalis*. ROCKY MOUNTAIN JAY.—Seen but once, May 29, 1906, two individuals.

37. *Nucifraga columbiana*. CLARK'S CROW.—Common resident. Saw female feeding four large young on May 14, 1906.

38. *Molothrus ater*. COWBIRD.—One, June 10, 1906.

39. *Sturnella neglecta*. WESTERN MEADOWLARK.—Common in all the open country of Baker County.

40. *Icterus bullocki*. BULLOCK'S ORIOLE.—Common among the cottonwoods.

41. *Euphagus cyanocephalus*. BREWER'S BLACKBIRD.—Abundant in the grain fields during August.

42. *Carpodacus cassinii*. CASSIN'S PURPLE FINCH.—Abundant summer resident; first seen April 1, 1906. Several pairs had nests close to our camp.

43. *Loxia curvirostra minor*. AMERICAN CROSSBILL.—Common resident; breeds.

44. *Leucosticte tephrocotis*. GRAY-CROWNED LEUCOSTICTE.—Two specimens taken from a flock containing about one hundred birds of both *L. tephrocotis* and *L. t. littoralis* on March 14, 1906.

45. *Leucosticte tephrocotis littoralis*. HEPBURN'S LEUCOSTICTE.—Abundant in large flocks when I arrived at Sparta, March 13, 1906, feeding around haystacks and corrals.

46. *Spinus pinus*. PINE SISKIN.— Abundant summer resident. Siskins and Cassin's Purple Finches were abundant around the camp yard all summer.

47. *Spizella passerina arizonæ*. WESTERN CHIPPING SPARROW.— Abundant summer resident. First seen April 29, 1906.

48. *Junco hyemalis shufeldti*. SHUFELDT'S JUNCO.— Common resident.

49. *Melospiza melodia merrilli*. MERRILL'S SONG SPARROW.— Seen but once in the mountains on April 10; common enough in the open country to the south.

50. *Melospiza lincolni*. LINCOLN'S SPARROW.— A single specimen taken May 31, 1907.

51. *Passerella iliaca schistacea*. SLATE-COLORED SPARROW.— First seen April 28, 1906. On June 22, 1906, while clearing away some brush I found a nest containing one fresh egg and the dead female. The ovary of the dead bird contained a perfect egg.

52. *Pipilo maculatus montanus*. MOUNTAIN TOWHEE.— Fairly common. First seen March 26, 1906.

53. *Oreospiza chlorura*. GREEN-TAILED TOWHEE.— Common. First seen April 10, 1906.

54. *Zamelodia melanocephala*. BLACK-HEADED GROSBEEK.— Seen only once or twice.

55. *Piranga ludoviciana*. WESTERN TANAGER.— Abundant summer resident. Arrives May 15.

56. *Hirundo erythrogastra*. BARN SWALLOW.— Common at Sparta. Breeds.

57. *Tacycineta thalassina lepida*. VIOLET-GREEN SWALLOW.— Seen but once,— a small flock on June 2.

58. *Bombycilla garrula*. BOHEMIAN WAXWING.— Two specimens secured on March 13, 1906; said to be a fairly common winter visitor.

59. *Vireosylva gilva swainsoni*. WESTERN WARBLING VIREO.— Common summer resident.

60. *Lanivireo solitarius cassini*. CASSIN'S VIREO.— First seen May 6, 1906; common by the 18th, breeds.

61. *Helminthophila rubricapilla gutturalis*. CALAVERAS WARBLER.— Seen but once; took a male July 9, 1906.

62. *Dendroica æstiva*. YELLOW WARBLER.— Common at Sparta, where it breeds.

63. *Dendroica auduboni*. AUDUBON'S WARBLER.— Common; arrives about April 1.

64. *Geothlypis tolmiei*. MACGILLIVRAY'S WARBLER.— Common. First seen May 5. Fresh eggs found June 12, June 25, and July 18, 1906.

65. *Geothlypis trichas occidentalis*. WESTERN YELLOW-THROAT.— Common along the Powder River flats in June, 1906.

66. *Oroscoptes montanus*. SAGE THRASHER.— Common among the sagebrush.

67. *Salpinctes obsoletus*. ROCK WREN.— Common along the bluffs near Powder River, but only seen once in the mountains.

69. *Troglodytes aëdon parkmani*. PARKMAN'S WREN.— Fairly common all summer.

70. *Nannus hiemalis pacificus*. WESTERN WINTER WREN.— Common resident; nested along the creek in moss and upturned roots and stumps. One nest on May 20 had four eggs which the bird promptly deserted after I disturbed her.

71. *Certhia familiaris montana*. ROCKY MOUNTAIN CREEPER.— Fairly common in March and April, but disappeared with the snow.

72. *Sitta carolinensis nelsoni*. ROCKY MOUNTAIN NUTHATCH.— Not common, but a permanent resident.

73. *Sitta canadensis*. RED-BREASTED NUTHATCH.— Common resident.

74. *Sitta pygmæa*. PYGMY NUTHATCH.— Abundant on the high ridges, nesting in dead pine tops.

75. *Penthestes rufescens*. CHESTNUT-BACKED CHICKADEE.— Fairly common; young were secured in July, 1906. I believe this record extends the range of this species somewhat.

76. *Penthestes atricapillus septentrionalis*. LONG-TAILED CHICKADEE.— A single example secured on May 30, 1907.

77. *Penthestes gambeli*. MOUNTAIN CHICKADEE.— Abundant resident; begins nesting early in May.

78. *Regulus calendula*. RUBY-CROWNED KINGLET.— Common summer resident in the deep fir thickets where their sweet song could be heard daily during May and June.

79. *Hylocichla ustulata swainsoni*. OLIVE-BACKED THRUSH.— Specimens sent to the United States National Museum were identified as this species. I know of no other records of *H. u. swainsoni* being taken in Oregon. Common; arrives about May 13; nests in June and July.

80. *Planesticus migratorius propinquus*. WESTERN ROBIN.— Common summer resident.

81. *Ixoreus naevius*. VARIED THRUSH.— Not common; a nest found on May 14, 1907, contained four young. Nest eight feet up in a small fir near a creek.

82. *Sialia mexicana occidentalis*. WESTERN BLUEBIRD.— Common; breeds.

83. *Sialia currucoides*. MOUNTAIN BLUEBIRD.— First seen during a snow storm on March 12, 1906. Breeds at Sparta in boxes built for wrens and swallows

NESTING OF THE BOHEMIAN WAXWING (*BOMBYCILLA GARRULUS*).

BY RUDOLPH M. ANDERSON.

ALTHOUGH I had occasionally met with this silky-plumaged and erratic wanderer at different times in winter in the northern United States, my first glimpse of the bird in summer was on June 8, 1908. The opportunity was offered while crossing the Mountain Portage, of the Slave River, between Smith's Landing and Fort Smith, on about the sixtieth parallel of north latitude. Here a series of rapids and cascades, extending for sixteen miles, compel passengers and freight for the Northwest Territories to be transported over a road varied with timber, hills, sandy ridges, and muskegs — notorious as one of the worst mosquito-infested localities in the North.

On this particular day, the hot sun kept the mosquitoes down to some extent, so that it was possible at times to dispense with the head-net, that necessary but obscuring hindrance to bird-observation in the North. Although the 'bull-dog' flies (a species of *Tabanus*), fairly swarm along the higher reaches of sandy road, they do not bother the collector very much.

About four miles south of Fort Smith, the road winds along a series of high sandy ridges, from a few hundred yards to half a mile from the Slave River. This area, for about a mile, has not long since been burned over, and is sparsely covered with scattering jack-pines (*Pinus banksiana*), white spruce (*Picea canadensis*) and a very few white poplars (*Populus tremuloides*). The ground is covered with short, scanty grasses and a low-spreading, ground-creeping shrub bearing dry red berries resembling small cranberries. At this place some wood had been cut and corded up in small piles here and there.

While passing this place about noon, I saw two Bohemian Waxwings, and followed one for some time, but did not succeed in securing it. In the afternoon I walked back again and saw about a dozen waxwings, singly and in two's and three's. They appeared to be mating and chased each other about more or less, and the peculiar lipping waxwing whistle was generally kept up. One bird perched upon a horizontal limb, launched forth and captured

a large dragon-fly on the wing, in true flycatcher style, flying to another tree to eat its prey. Three specimens were obtained, one male and two females. The stomach of one bird was filled with the small red ground berries.

The next day, June 9, I passed over the road again on the way to the White Pelican rookery at the Mountain Rapid, and saw several Bohemian Waxwings, at intervals for a mile or two along the "Brulé," but did not have time to prosecute the search for nests.

June 10 in the afternoon I walked back again from Fort Smith to the locality frequented by the Waxwings. The day was very hot, and mosquitoes were not so numerous as on the two previous days, but sandflies, black-flies, or tiny, stinging gnats were present in swarms, and were very annoying, seriously interfering with observations, as they persisted in flying into one's eyes.

Several Bohemian Waxwings were found, near the same place as before, sometimes perching on the topmost twig of a jack pine or spruce, but usually among the upper branches. They were not in flocks, but singly or in pairs, and I think about seven or eight birds were in the vicinity, although an accurate count was impossible, as the birds were very restless, and flew about a great deal.

Again, I watched a waxwing fly from its perch, catch a large dragon-fly on the wing, fly to another tree, and begin to devour the insect at its leisure. I fired at this bird at rather close range with dust shot, causing it to fly to another tree, still carrying the dragon-fly. Here the bird finished its meal in peace.

About two hours were spent searching for nests in the tall, scattered jack-pines and spruces. Each tree had to be inspected carefully from bottom to top, and I was often deceived by small bunches of dead twigs, needles and moss which collect in all parts of these trees. The lower branches particularly, bear great quantities of fine-fibred, pale tea-green moss, which often hangs in long festoons closely resembling birds' nests. Several times I saw waxwings flying rather anxiously about, but making no noise, contrary to the usual habit of these birds. I finally shot one female, whose under parts had lost many feathers, and whose actions showed that her nest was undoubtedly near by. Soon I saw what appeared to be a nest, a moss-covered bunch near the top of a straight,

slender jack-pine (*Pinus banksiana*), about 45 feet from the ground. The nest, however, was so artfully concealed and draped with mosses that I could not be sure that it really was a nest until I actually peered over the edge of it.

The nest contained six eggs, which proved to be almost fresh; incubation less than one day. Color: ground color, pale bluish tending to ashy, with sparsely scattered small round black spots and obscure pale purplish shell markings sparsely and irregularly scattered over the whole surface, but chiefly on larger end. One egg was much less spotted than the others, the markings almost absent from the larger end. Size (millimetres): 23.5×18 ; 23.4×18 ; 24×17 ; 24×18 ; 23.5×17.7 ; 23.5×17.7 .

The nest measured $6\frac{1}{2}$ inches in outside diameter, and $2\frac{1}{4}$ inside; depth (outside) 3 inches, (inside) $1\frac{1}{2}$ inches; composed externally of small, short, dead pine twigs loosely arranged and partially covered with pale green moss, and small bunches of white cottony vegetable fibres. The nest lining consisted of a few fine grasses, a few bunches of fine wooly black moss, and bunches of the soft white cotton.

The tree containing the nest was at least twenty feet from any other tree and had no limbs for at least twenty feet from the ground. The nest was placed close to the body of the tree and supported by two small nearly horizontal limbs and a few lateral supporting twigs from these. The nest itself was fairly well covered with moss, similar to that upon the branches of the tree, and the dark gray irregular-shaped cones of the Banksian pine, lying closely against the limbs, formed knobby bunches which made the nest appear even more indistinct from the ground. The whole structure was in such a position that it would scarcely be discovered without careful search and the parent birds gave few clues to its whereabouts.

SOME HABITS OF THE ENGLISH SPARROW (*PASSER DOMESTICUS*).¹

BY CHARLES W. TOWNSEND, M. D.

A CERTAIN Spanish proverb advises us in case we "do not get what we like to like what we get." I am doubtful whether my philosophy will ever bring me to the point of liking the English Sparrow, but as most of my life is spent within the confines of brick-lined streets, where the chief and nearly solitary ornithological species is this same English Sparrow, it has seemed to me wise to observe and to jot down my observations on the habits of this much hated, and therefore much neglected bird. I shall not refer here to the large subject of the relations of this alien to our native birds, for of that side of the question much has been written, and this too although my notes abound in such data and hark back to the time when the English Sparrow was only beginning to drive out the Tree Swallow and other box-building birds from our cities. Most of the present day bird students can with difficulty realize that about thirty years ago Tree Swallows were common breeding birds even in our large cities. But I must avoid this sad and irritating side of the subject.

In the description of the habits of passerine birds, the account of their song generally occupies an important part, but in the case of the English Sparrow the song is reduced to the simplest terms and consists merely of a repetition of the call notes. Whether the primitive nature of their song is due to the fact that it has never developed beyond this point, or whether it is a degeneration or reversion from a more evolved song are merely matters of conjecture, but it seems reasonable to suppose that in either case the noise and hubbub of mankind among which the birds live has something to do with is harsh, unmusical character.

That this repetition of the call notes constitutes their song, one cannot doubt who has listened to the jangling racket on a spring morning. This 'chorus' begins from twenty to thirty minutes before sunrise in April, May and June on bright days,— fifteen

¹ Read before the Nuttall Ornithological Club, November 9, 1908.

or twenty minutes later on cloudy days,— and lasts in full volume nearly an hour. A few scattering chirps are first heard from the early ones, but the multitudes on vines and trees and house-tops soon take up the theme, and the din is almost deafening. The chief note is *chis-ick* or *tsee-up* monotonously repeated, with various modifications, for the most part high pitched and ear racking, but occasionally deeper and almost melodious. Certain individuals repeat notes or even series of notes that are not unattractive, and may even be called musical. These are not common but may be heard every spring, and, on mild days, even as early as January. At the height of the morning chorus, for such it must be called, there is at times a distinct rhythm, caused by some of the birds keeping time. This chirping rhythm I have frequently tried to count but generally without success, for each bird appears to chirp manfully on his own hook without regard to time. I have, however, sometimes found its rate to be 60 or 70 times a minute, slowing down to 40 on hot days. In this respect the Sparrow differs directly from the cold blooded insect that sings faster the hotter the weather.

Individual singers may be heard at almost any time during the day in the spring months, but after the morning chorus, scattering chirps, conversational tones and angry scrapping notes are more common, as well as the loud rattling call which seems to be almost entirely limited to the female, although I have occasionally heard it from the male. This rattling call is frequently emitted by the female as she flies to feed her young either in the nest or on the street, as well as when she playfully or in anger flies at her mate. I do not feel sure of the full significance of this rattle and it deserves further study.

An early morning in August in the city lacks this chorus, just as in the country August mornings are as destitute of our native birds' songs as June mornings are full of them, which helps to prove the assumption just made that the House Sparrow is a songster even if a vile and primitive one. Thus in late August the sparrows may be heard to chatter in conversational ways beginning ten or fifteen minutes before sunrise, but there is no rapid repetition of call notes, no chorus, no hint of a song.

As the extermination of this bird appears to be utterly out of the question, our only hope lies in education, for it has been found by

several experimenters that the young English Sparrow separated from his unmusical parents and associated with song birds, readily acquires his foster parents' melody. A few such educated ones in each city might prove to be missionaries in a good cause. Certainly we may hope for this in the millennium! Until that time we can look upon the present infliction of their 'song' as an opportunity to cultivate our philosophy, and to turn deaf ears to it, or to seize with pleasure on the occasional musical notes welcoming the spring.

One of the most noticeable habits of the English Sparrow, is the courting that goes shamelessly on under our very feet. The strut of the male — and he is a handsomely marked bird but woefully smoke begrimed these soft coal days — is always amusing. With flattened back, head held up and tail down, wings out from the body, the tips of the primaries touching or nearly touching the ground, he hops back and forth before the coy female as if on springs. Not one but several dance thus before a lady who barely deigns to look at them, and then only to peck in feigned disgust at the love-lorn suitors. These pecks are often far from love pats. At times she stands in the middle of a ring of males at whom she pecks viciously in turn as they fly by, all chirping excitedly at the top of their lungs. The casual observer might think the lady was being tormented by a crowd of ungallant males, but the opposite is in reality the case for the lady is well pleased and is showing her pretended feminine contempt for the male sex, who on their part are trying their best to attract and charm her. At other times she plants her bill firmly in the head of the suitor, and pecks at him violently from time to time without letting go her hold. I have seen several such one-sided fights, for the oppressed rarely fights back, where the male seemed to be on the verge of exhaustion, lying panting on the ground, but on being disturbed both birds flew off apparently none the worse.

Fights between rival males are also common, and here the birds generally endeavor to fasten their bills into each others heads and necks, and continue the fight until both are exhausted lying on the ground. Peace loving human passers-by generally interrupt these fights, just as they do the fights of street gamins, but the birds generally fly off swearing vigorously as they go, to renew their

fight elsewhere just as do the gamins. In fact there are many points of similarity between the two species.

About a year ago I watched two males in a fierce encounter on the small grass plot in front of my house. One had the other by the bill and held him back downwards on the grass. They were both using their claws vigorously and bracing with their wings. Occasionally they would roll over, or go head over heels. Breaking apart they would fly up at each other like enraged barn-yard cocks. Although I stood within two feet of them, so intent were they that they did not notice me until I made an incautious movement and they fled to fight elsewhere.

A disgraceful fight between two female English Sparrows occurred in front of my house one April day. Catching each other by the bills they pulled and tugged and rolled over on the grass. When they broke away the fight was renewed a few inches above the ground in fighting cock style. Three males appeared, and watched the fight. One, evidently scandalized, endeavored to separate the Amazons by pecking at them, but they paid no attention to him and only after some time flew away, one chasing the other.

The favorite food of the English Sparrow is the semi-digested oats found in horse droppings, and I have noticed him to forsake some raw oats spilt on the ground for the sake of these semi-digested ones. Although scratching would be a useful accomplishment in the acquisition of this his favorite food, he has not learned it like many other sparrows, but he plies his stout bill vigorously like an axe and effectually accomplishes the object. He has, however, learned to use his tail as a prop like a woodpecker and he may often be seen searching for insects in this position on a tree trunk or even on the vertical side of a brick house.

Like many other birds the English Sparrow suffers from hot weather and shows his distress at such times by wide open mouth.

English Sparrows are decidedly social in their habits. For thirty years or more they have been in the habit of roosting at night in the trees of King's Chapel burying-ground in Boston—perhaps they were attracted by the English associations of the place. I have made several observations of this roost. They frequent the place throughout the year but are decidedly less numerous in the spring months and most numerous during the fall and winter.

Thus on November 25, 1905, between 4 and 5 P. M., I estimated that about 3000 sparrows were in this place on five trees. The other two trees were empty. On February 20, 1906, on a mild pleasant day, when the sun set at 5.24 P. M., the roost was studied from the near-by City Hall. The roosting trees seen from above looked as if their limbs had been whitewashed and the ground and grass beneath were similarly affected. The first arrivals appear at 3.45 P. M., about a dozen in all. At 4 the birds are coming singly and in small groups alighting in the trees but frequently changing from place to place, chirping continuously and fighting for positions. At 4.05 a flock of 12 fly swiftly and directly to one tree; 4.10 P. M.: there are now about 150 sparrows present, but new ones are constantly sailing in with wings wide spread from over or between the surrounding high buildings. They fly with astonishing swiftness and directness, projected as it were from space directly into the roost,—is it the city rush and scramble for position? 4.15 P. M. It is now raining birds. I have seen only one alight on a building before entering the roost; they are in too much of a hurry to get there. The trees are a scene of great activity and the noise rises above the roar of the city's streets. The birds are crowding together in the trees, constantly fighting and flying about as they are forced from their perches. At 4.30 the birds are still coming, but by 4.45 there is a noticeable diminution in the numbers of the coming birds and by 5 o'clock the movement has ceased with the exception of a few stragglers. Many are now spreading their wings and tails and composing themselves for sleep. At 5.30 the roost is still noisy but many are fast asleep, and before long all is quiet.

For several weeks before Christmas each year a large department store across the narrow street is brilliantly illuminated by electricity, but the birds sleep quietly notwithstanding the glare and the noise of the traffic. On March 19, 1906, I inspected this roost at 5.45 P. M. during a heavy snowstorm. The birds were as thick as usual but rather lower in the trees and sitting breast to the storm. Although most of them were asleep some were still talkative. On May 11, 1908, I estimated at 6 P. M. that there were perhaps about one tenth as many birds in the roost as in winter. Both males and females were present, the former often strutting in turkey cock attitude and the females picking at them. It is

probable that most of the roost consisted of males, but it was evident that a few unmated females yet remained at this late date.

On August 29, 1908, I again watched the Sparrows enter their sleeping quarters at King's Chapel burying-ground, and by counting the birds as they entered for fifteen minutes at a time at intervals, I was enabled to make a fairly accurate estimate of 3400 birds in the roost. With the exception of a few stragglers they all came in between 4.30 and 5.55 p. m. The sun set at 6.28. Judging from the noise, the number of birds in the roost was considerably less than in winter, so that my previous estimate was probably too low.

On November 26, 1905, I watched the King's Chapel roost wake up and depart about its day's business. All were asleep and quiet until 6 o'clock when the first chirp was heard, while the stars were still shining, and the first movement took place at 6.05, when a sparrow flew from one branch to another. The sleeping ones had their heads depressed in front, or the head turned around with the bill concealed in the feathers of the back. A sudden general chirping begins at 6.07 and a few buzz about from branch to branch. The chirping swells into a continuous volume of sound, not the chorus of the spring, but a confused conversational chirping noise as if all were talking at once. Birds buzz about with rapid wing vibrations, suggestive of hummingbirds. The first one flies off in an unsteady way as if still half asleep at 6.12. The sound grows louder, although the majority still appear to be asleep. Some are stretching their wings and preening their feathers. The stars are nearly gone. At 6.20 no. 2 flies off uncertainly. 6.25. Now there is greater noise and activity. Many are flying about and a dozen or more have left. All awake seem to enjoy spreading their tails. A considerable proportion sleep on through the hubbub. There is very little fighting compared with the evening. 6.26. Now the birds are leaving constantly. 6.27. They are leaving in bands of 15 or 20 at a time. 6.30 A. M. The stream of outgoers, mostly down Tremont Street to the north, is now continuous and too great to count. The remaining birds are noisy in the extreme, flying about vigorously and filling up the empty trees. 6.35 A. M. It is now broad daylight and the birds are flying off like bees, but more or less in waves. A few still sleep on undisturbed. The sun rose about 6.50 and by that time doubtless all or nearly all of the birds had gone.

Besides the King's Chapel roost there are several other smaller ones that have later been established in Boston, namely, one in the Granery burying-ground, one in some trees on the Common, one in Franklin Square, besides doubtless others. The roost at Franklin Square is within fifty yards of the elevated train and at about the level of the frequently passing trains, yet I have seen the birds sleeping quietly there in the midst of the deafening racket.

In the early days the gathering in King's Chapel burying-ground were viewed with alarm, for it was feared that the imported darlings were about to migrate elsewhere, perhaps to the Mother Country. Alas this migration has never taken place!

THE VIRGINIA AND SORA RAILS NESTING IN NEW YORK CITY.

BY J. A. WEBER.

THE marshes inhabited by the rails are situated at the northern portion of Manhattan Island and extend northward and eastward from the foot of the hill at Fort George (190th Street and Amsterdam Avenue). These marshes formerly lined the shore of the Harlem River, but through street improvements have been separated from the river and cut up into small areas. The water in these marshes no longer rises and falls with the tide and the only connection with the river is through drain pipes under the streets; consequently the water is more or less fresh.

The rails first attracted my attention during the early part of June, 1902, when my brother who had climbed into an oak tree overlooking one of the marshes, shouted to me that he saw some water chickens running about in the swamp. I made a thorough search of the marshes on the 24th of the same month and secured a specimen, which proved to be the Virginia Rail (*Rallus virginianus*). It was the 4th of June, 1905, however, before I discovered any nest and eggs. This nest was found in the cattail marsh

situated on Ninth Avenue between 205th and 206th Streets. The eggs were scattered in and around the nest and had been emptied of their contents by some animal, probably by a muskrat. I found a dead rail in the vicinity but was unable to determine the cause of her death.

On June 1, 1907, I found a Virginia Rail on her nest, incubating ten eggs, in the patch of rushes about half a block south of the Dyckman Street subway station. The bird allowed me to approach within three feet of her, when I flushed her from the nest by a sudden movement on my part to gain a solid footing. She remained in the immediate vicinity of her nest while I adjusted my camera, strutting about with her feathers puffed up and wings spread like a turkey cock, giving her a rather formidable appearance: at the same time she uttered a low grunting sound which I had never heard from a rail before and quite unlike their characteristic notes. The male showed his interest by his sharp *kěck-kěck-kěck-kěck* calls, evidently trying to lead me away from the nest.

The nest was placed in the usual position near one of the streamlets which intersect all of these marshes, forming an irregular network, in the center of a circular bunch of growing cattails. It consisted of a mass of cattail blades and stems, placed layer upon layer, the foundation resting on the mud, so that the rim of the nest was 7 inches above the surface of the water. The inside of the nest was rather shallow, $4\frac{3}{4} \times 4\frac{1}{2}$ inches in diameter, and lined with cattail blade chips $\frac{1}{2}$ to 2 inches in length.

I discovered another nest of the Virginia Rail on June 6, 1908, in the small marsh bordering on Dyckman Street, with two baseball fields adjoining it on the east and south. The nest was placed within twenty feet of the street where hundreds of people as well as vehicles pass daily and large crowds often assemble to witness the Speedway trotting races or the baseball games. Yet the little mother rail quietly sat on her ten eggs, apparently unconcerned about the civilization around her. She was fully as tame as the former bird and acted in a similar manner. I tried to photograph her on the nest but she refused to return to the nest while the camera was near it; I had no difficulty however in taking snapshots of her as she crossed and re-crossed the narrow lanes through the cattails made by the ditches of water.

Within an hour after finding the above nest, I discovered a nest of the Sora (*Porzana carolina*), containing 14 eggs. This bird, unlike the Virginia Rail, was very shy, necessitating several visits to the swamp to accurately identify her. Approach the nest ever so stealthily, she would dart from the nest, and go off splashing through the water, before you were within fifteen feet of her, the only indication of her and her mate's presence being a call note at a distance from the nest.

The marsh in which this nest was built is situated on the south side of 207th Street between the foot of the new bridge across the Harlem River at this point and the 207th Street subway station. The marsh is so close to the subway station that some of the passengers noticed and watched me from the station platform while I was floundering about among the rushes. Yet strangely enough the noise of the numerous passing trains did not deter these shy birds from nesting in such close proximity.

The nest of this bird differed in many ways from the Virginia Rails' nests. It was suspended in a clump of cattails; the material composing the nest extended about 5 inches above and below the surface of the water, leaving the bottom of the nest about 11 inches clear of the mud below it. The foundation of the nest looked like a miniature hammock, and the bird probably formed it by simply trampling down the dead lower blades still adhering to the growing cattails. The composition of the nest, like that of the Virginia Rail's, consisted of cattail blades, but the lining of the nest presented a distinct departure, being made of fine marsh grasses in place of the chips of flat cattail blades. The inside of the nest was $3\frac{1}{2} \times 4$ inches in diameter and $2\frac{1}{2}$ inches in depth, and deeply cup-shaped in contrast to the rather flat form of the other bird. It was loosely arched over by the growing rushes surrounding it and concealing the bird so that it was difficult to identify her. A narrow runway of fallen dead cattails led to the nest; this appears to be a characteristic feature of all the nests of this family of birds I have found. The water in this swamp was 16 inches or more in depth throughout, due to a clogging of the drain pipe. I was unable to find any Virginia Rails in this swamp; evidently this depth of water is preferred by the Sora but not by the former bird.

The breast of the Sora is about $1\frac{1}{2}$ inches in diameter and it

seemed wonderful to me how the little bird managed to keep her fourteen comparatively large eggs warm. She succeeded, however, for they were found to be in various stages of advanced incubation. So deeply cup-shaped was the nest that the eggs around the edge were in an almost vertical position, thereby considerably reducing the horizontal area to be covered. Upon a subsequent visit to the nest, two of the eggs were found in the center of the nest lying on top of the others; a habit also shared by the domestic hen of placing one egg in this position. The bird probably shifted the eggs occasionally so as to get the others in this position to give them an extra amount of heat and render their hatching more certain.

Ridgway's 'Manual of the Birds of North America,' states the size of the Sora's eggs as $1.23 \times .89$ inches; the average size of the above set is $1.18 \times .89$ inches, but the loss in size of the individual egg is amply supplied by the larger number of eggs in the clutch, numbering 14 while Ridgway's 'Manual' quotes the number as 9 to 12. The measurements of two sets of Virginia Rail's eggs showed an average of $1.32 \times .98$ and $1.22 \times .92$ inches proving the eggs of this bird to be larger than the Sora's; but the difference in size is not as apparent as the difference in color and the distribution of the markings. The ground color of the Virginia's eggs is cream buff, that of the Sora is much darker, being deep brownish buff. The eggs of both species are abundantly spotted and speckled with chocolate brown and a few purplish gray and greenish spots and specks; but the spots of the Virginia's eggs form a dense cluster around the larger end, while on the Sora's they are evenly distributed over the egg with no tendency to cluster at the larger end.

During the past few years building operations and street improvements have encroached so much on the breeding grounds of the Rails, Red-winged Blackbirds and Meadowlarks, that I fear the breeding of these birds in this locality will soon terminate.

INSTINCTIVE STILLNESS IN BIRDS.

BY WILLIAM PALMER.

"NEARLY all hermits and holy men who live apart from the big cities have the reputation of being able to work miracles with the wild things, but all the miracle lies in keeping still, in never making a hasty movement, and, for a long time, at least, in never looking directly at a visitor."¹

ACCORDING to one's knowledge and experience the subject of mimicry may be divided into a number of divisions but their limits are rather uncertain. In my opinion the dominant psychical feature in perhaps all mimicking birds is stillness in the presence of known or probable danger; and it is also an aid with its near relative, caution or slowness, in aggressive mimicry. The other features of bird economy necessarily involved are always subordinate to these, as will develop later. To give point to these facts the following instances, a few of many, are offered as illustrations.

While walking along a beach one summer a Spotted Sandpiper (*Actitis macularia*) and a single young were noticed some distance ahead. As I approached the place the old bird, with the startled manner characteristic of its kind at such a time, kept well ahead, but I could not find the other. Going back some distance I waited and soon saw it again with its parent. I repeated my quest and again failed to find the youngster. Going back once more and again seeing it rejoin the old bird I slowly moved forward keeping my eyes this time very intently on it and soon picked it up from the sand, an unwilling captive.

I once had considerable experience with the Pribylov Sandpiper (*Arquatella ptilocnemis*). The young could often be seen at a distance, but when approached and squatting it was almost impossible to distinguish them from the tundra vegetation. Finding one on one occasion I wished to photograph it as it lay. I had dropped my basket and camera on first seeing the bird which was not then under the care of its parents. Dropping my cap near the bird I slowly retreated backwards, obtained the camera and slowly returned to the spot, but the bird had moved. Failing to find it

¹ Kipling, in 'The Miracle of Purun Bhaget' (The Second Jungle Book).

and leaving the cap as a center I walked in a wide circle and then began to spiral toward it. Using the utmost carefulness and straining my eyes I found my bird and made the exposure. As in all other cases its colors and markings almost exactly matched the vegetation; it is really a wonderful mimic, and it required very careful work to distinguish it, but once found it seemed more conspicuous, and this is usual in similar cases, for with time our eyes become better accustomed to the contour of the squatting bird.

On the same island, St. Paul, I once stood for a long time knee deep in cold water looking for some young Phalaropes (*Lobipes lobatus*) which I knew were clinging to the scanty grass and, as it proved, not three feet in front of me. Yet a movement on their part would have instantly betrayed them, my eyesight was excellent and I knew what I wanted and expected to find.

These few examples represent a common experience of field naturalists familiar with this group of birds. They are also characteristic of young Terns and Gulls, of Quail and numerous other species, but not always of the adults.

Seeing a Least Bittern (*Ixobrychus exilis*) flying over a marsh one dull afternoon I marked the place, but upon pushing there in my skiff I was utterly unable to locate it. Later I put up another and marking where it had alighted had the greatest difficulty in finding it clinging motionless with bill almost erect, to a stem of wild oats (*Zizania aquatica*).

The following interesting experience occurred in Florida. I had been walking among the pines with my gun and had slowly approached the backwater of the Kissimmee River where the water had overflowed the short grass well back of the usual shoreline. Here I soon noticed a Louisiana Heron (*Hydranassa tricolor ruficollis*) standing in a few inches of water near a small clump of scrub palmettoes (*Sabal* sp.) and at once conceived the idea of trying to find out how near I could get to the bird. Using the clump as a blind I gradually moved to within about sixty feet. Waiting a while to notice the bird and to allay its fears, for it had evidently detected me, I sat down on the grass and slowly worked myself to one side of the clump in full view of the heron and not over forty feet away. Here I sat for some time lounging, first on one side and then on the other, at the same time working myself gradually nearer

to the water, the heron all the time standing upright and immobile with its breast toward me, the neck upstretched and the bill pointed skyward. I could plainly see the irides, but the bird, now about twenty-five feet off, stood absolutely still for perhaps twenty minutes until I arose and then it flew off.

A friend recently told me of a singular and most unusual instance so far as man is concerned. A party of hunters at Catlett's station in King William County, Virginia, had started a Wild Turkey (*Meleagris gallopavo silvestris*) in the woods which flew out over an old field of sage grass (*Andropogon*) and alighted into it. Marking the distance and calling the dogs they worked toward the place and after considerable search failed to find the game until suddenly one of the dogs came to a stand. Even then no turkey was visible and they were about to give up the attempt when one of the hunters who had stood in one place watching the men and dogs, felt his hand touch something. Looking down he was surprised to see the turkey at his feet crouching and motionless with outstretched neck. It surely deserved a better fate than to be promptly seized by the neck.

On the side of Mount Shasta in California on a large fallen tree trunk a party of five saw a Blue-tailed Grouse (*Dendragapus obscurus sierræ*) in a motionless and crouching posture with neck outstretched. It permitted Dr. M. W. Lyon, Jr., and myself to get on the base of the tree and to slowly walk within twelve feet before it suddenly took flight down the mountain side.

Another instance of this kind has been told me by Mr. N. R. Wood. He was in a field watching a hen that had a brood of chickens when an approaching hawk was noticed; uttering her note of alarm the chicks instantly scattered into the surrounding vegetation, except one, which was probably the last to take alarm and judging the danger imminent stiffened at once into the characteristic position. In another case all of a flock acted in a similar manner.

Walking through a field of short grass in Virginia I noticed some distance ahead a covey of half-grown Quail (*Colinus virginianus*). Approaching somewhat carelessly, but with the intention of ascertaining how near I could get to them, I was surprised to find that I could not see the birds. Standing still I slowly scanned the ground over but without success until suddenly I caught the blinking of

an eye. On the instant it seemed that the bird realized that I had seen it for immediately it took flight.

We have a canary, a dark bird with a streaky plumage, that we often allow the freedom of the kitchen and pantry. At first it was greatly averse to being handled but now offers little resistance if caught. It often comes when called yet occasionally it is perverse. At such times when looked for it is generally motionless and will when seen sometimes utter an inquisitive note, but is usually mute. If it happens to be on a dark object, or in the shade it is sometimes overlooked and will not answer, but will allow itself to be picked up. If, however, it is on an object of a light color, or in the light, it acts differently and when approached will suddenly take flight, run off, or hop on to a finger. In its habits it is very unlike the ordinary yellow bird, is very intelligent and seems instinctively to realize its unusual coloration.

On the Potomac River, above the Great Falls in Virginia, I once surprised a female Summer Duck (*Aix sponsa*) with a brood of eight quarter-grown young. In her excitement she fluttered greatly and uttering loud cries of alarm soon made off. Meanwhile the young paddled swiftly to the shore where I saw all land some fifty feet up the stream. I hurried to the spot but failed to see any of them after they had reached the shore.

To surprise a Ruffed Grouse (*Bonasa umbellus*) with little ones is quite an experience in still mimicry. Though the twelve or fifteen young may for a few moments be running in every direction, and knowing that all are within a few feet crouching and quiet, it is a difficult matter to pick up more than one or two, but more probably none. How often one has walked to within a few feet of an unsuspected grouse, or Woodcock (*Philohela minor*), only to have it fly off suddenly, yet one is rarely seen before it starts, and it is exceedingly difficult to find one if it remains quiet even when we know about where it had alighted. Perhaps the best example of this immobility and then sudden flight at the possibly critical moment, at least where man is the intruder, is afforded by the American Bittern (*Botaurus lentiginosus*), as its color and fine shading in its marshy environment with its almost erect motionless attitude is a fair illustration of my subject and suggests at once that the coloration of the bird assumed its present well known distinctive

features because of its association with its present type of environment, habit and protection through its happily mimetic values being the main incentives to the direction of color development during the early formative stages of the species, the unfitted grades of variation being weeded out by absorption into the general mass of the species, or destroyed.

Wounded birds are often hard to find as the experienced are well aware. As a good example I select the following incident told me by Mr. H. S. Barber. His brother had made a long shot at one of three Great Blue Herons (*Ardea herodias*) in a Florida marsh. The ball had broken both wings and the bird dropped helpless. The boys rushed onwards to secure their game but to their great surprise were unable to find it and could not account for its disappearance. Finally one of the boys started to turn over a pile of supposed rubbish with his foot when to their great surprise it proved to be the wounded bird that now tried to make off.

I was hunting turkeys in Virginia. My companion and myself had started out before daylight and had separated in the woods about where we expected the turkeys were roosting. I had slowly walked down a slope in a wide ravine, listening, and lingering for a little more light, and finally leaned against a large tree with my hands in my pockets, gun under my arm and my eyes trying to penetrate the slowly vanishing gloom. I thus stood, still and somewhat chilled, for at least thirty minutes with eyes and ears expectant when behind me I heard the cautious pit-pat of feet on the leaves. Keeping my body nearly in the same place I slowly turned my head, at the same time withdrawing my hands for action. Behind me in full view was the best and most interesting gunning experience of a lifetime, a flock of at least a dozen turkeys, the nearest not over twenty-five feet away, the farthest well within gunshot. But for my next movement I have no doubt that the whole flock would have walked by my motionless figure. In this instance but very little mimicry is involved, the general resemblance of my quiet form to the surrounding tree trunks preventing me from being noticed because of the absence of motion on my part.

Mr. Nelson R. Wood has given me the following instance that illustrates another phase of these quiet moments of bird-life. A gunner in Florida had gone out to hunt Wild Turkeys (*Meleagris*

gallopavo osceola). He was standing in the corner of a fence when a turkey, accompanied by a flock of little ones, jumped through a gap on his right. They slowly advanced toward him and it was only when the old bird was nearly opposite him that he was evidently noticed. Without alarm she continued on her way past, and but a few feet off, until the young had reached the opposite fence when, suddenly uttering her note of alarm, the brood instantly scattered through the rails while the mother bird flew off over them. The man was so astonished at the arrival of the birds, and then at the apparent nonchalance of the mother, that he entirely forgot his object and did not recover his presence of mind until the whirl of wings showed him that he had been outwitted.

A friend and myself were recently eating our lunch on a narrow sandy beach of Chesapeake Bay. An adult Spotted Sandpiper soon came quietly toward us picking up food on its way. When about twelve feet off it noticed us for the first time, hesitated and viewed us intently and motionless for what seemed a long period and then retraced its steps for a short distance. Once more it returned, examined the strange coatless and motionless things in its way and then went back, occasionally picking up food, but soon facing us again. A few Turkey Vultures (*Cathartes aura septentrionalis*) had been sailing above the cliffs behind us and once in a while a shadow would pass up or over the beach. As the bird viewed us from its last stand it soon noticed a vulture coming near and instantly turning with its tail toward us, head and bill obliquely pointing to the water and crouching a little, stood as if turned to stone while the shadow passed within a few feet. The whole performance, so near and unusual, was a very pretty and unexpected exhibit of mimicry with its attendant stillness. The color of the bird's back was in perfect harmony with the wet sand and it certainly seemed doubtful that it could have been seen by a predatory enemy except when it was in motion.

Stillness is not a characteristic of birds alone, as the following instance that occurred on St. Paul's Island, Alaska, shows. Wandering over the island on a bright day I had reached the large lake toward Northeast Point and was walking on its narrow beach when I noticed the track of a Blue Fox, and finally caught sight of it as it rounded one of the numerous points jutting out into the

water. Apparently the fox did not notice me for it jogged along easily and I finally lost sight of it when it disturbed a large number of gulls which had been resting on a larger point of sand. When I reached this place all the birds had left and I could see nothing there except, as I thought, two stones. I therefore crossed the sandy triangle at its base and reached the opposite side. Here I was surprised not to see the tracks again and began looking for the fox. It had not passed me and no return tracks were to be seen. I hesitated awhile, looking in every direction, and finally determined to make sure of the 'stones' which were then easily within gunshot. When about thirty feet off the rusty summer-coated fox arose and began running back over his incoming tracks. But for my wonder and then my curiosity I might have missed my specimen. Foxes in out of the way places have been known to play hide and seek, as it were, even behind a plant stalk and to make off when they found that they were discovered. Fawns and young antelopes squat on the ground like young waders, and for the same reason, mimicry and stillness, inability to do otherwise, for movement might attract instant unfavorable attention.

A Gray Squirrel spread and flattened motionless against the trunk of a tulip poplar is effectively a mimic on the irregularly colored gray bark against a flying or stationary hawk and often against a gunner. On the other hand a moving squirrel can be readily located by a perching hawk. That sudden movement causes alarm is shown by the well known fact that weasels, mice, rabbits, and many other species may play about and even cross the feet of a person who remains quiet, but upon moving they rapidly disappear.

A party of Audubon people had started a Henslow Sparrow (*Coturniculus henslowi*) in an old field. It flew to a clump of scanty leaved bushes where about a dozen of us surrounded it. For fully fifteen minutes the party watched it perched motionless about four feet above the ground. It would not fly upwards for the species rarely does except when migrating. It would not fly off on a level at the usual height of its flight for we were in the way. It could not reach the ground as there was not space for its usual downward flight and so it remained perched immobile and but a few feet from the nearest person as long as any cared to stay. In

numerous cases birds when alarmed will fly into trees or bushes and either pass rapidly to the opposite side and thus escape, or imitate the leaves by remaining quiet.

Many more instances of absence of motion at a critical moment might be given, but almost everyone with a wide and diversified experience with birds has had many opportunities of becoming interested in these phases of their life. That the bird does not reason is shown by the fact that it may stiffen into its mimicking position of immobility even when its attitude is incongruously out of place with its surroundings. However, the facts should be studied, not in single instances, but by observing the general habits and the natural economy of the species in its usual environment and in its attitude against its usual enemies. On the whole these occasional motionless postures are distinctly of advantage to the species and thoroughly ingrained into their life, and if at times seemingly fantastic and absurd to us, are really very effective when used against the ordinary and entirely natural causes which influence them. Man with his ideas, practices and weapons is but an artificial product and has had no part in shaping these peculiar habits of bird-life.

When ground birds are approached after a sudden flight they may get up wild, run off rapidly, or remain quiet and are then often extremely difficult to find. Color in woodland has an uncertain and slight value usually because lights and shadows are often extremely complex and broken; while the accidental and complex variation of size and shape of the details of the ground cover is very effective in favor of the hiding, or setting, bird.

Many birds will not eat unless their food is in motion. A motionless insect has little or no attraction whereas movement at once tempts the appetite. Simulation of life by using a wire and a dead mouse will sometimes induce a captive snake to eat. I have seen a mother bird lamenting the dangerous position of its offspring cease in her grief because a tempting morsel by its motion attracted attention. Motion attracts the enemy, stillness does not, unless some other feature, as some defect, or unusual condition of the environment, or view, places the mimic in jeopardy.

It was often an object with me to try to ascertain how close I could get to a bird in the open. I tried many ways and at last

became quite successful. It was found in a large number of cases that by walking in a straight line, slightly crouching and taking short quick steps without wobbling or swaying, it was often possible to get much nearer than by other means. In most cases the bird not noticing or understanding the slight increase in size as I drew nearer, nor being influenced by irregular side motions, would remain perched for quite a while and sometimes appeared interested. In other cases I found that by not walking directly toward a bird but viewing it occasionally out of the corner of my eye, it was possible to approach quite closely and even to walk around it. Confidence and curiosity may be induced by cautious movement so that even a sitting bird can be stroked. With care one can drive flocks of sandpipers along a beach while but a few feet behind them as well as single birds.

It is a rare experience to stalk a Wild Turkey but rarer still to stalk a flock. On one occasion I heard turkeys far off in some rather open woods soon after sunrise and debated with myself the possibility of getting within range. Approaching them, but still some distance away, I took care to move in a straight line while in possible vision. At last I had only to climb one small hill after crossing a flat wet ravine and though I really had but little expectation of working myself near enough for a shot I concluded to attempt it. Long before I had been in sight of the turkeys, as I supposed though I had not seen them, I had dropped on my knees using my left hand as one foot and the gunstock in my right as another and keeping my head down made fair although slow progress. The turkeys were very suspicious, but evidently unwilling to allow such a strange and slow-moving creature to drive them away, so their inquisitiveness, or indecision, influenced them to permit too near an approach.

In Aggressive Mimicry the following will illustrate the importance of stillness and its relative, cautious movement. A heron walking along the water's edge by its motion drives away the minnows swarming in the shallows, but if it stands motionless they slowly return and the bird readily obtains its meal. If its forward movement is slow and stealthy the movements of the fish will correspond, while quicker or uncertain motions cause a different action in the fish than the more effective one. Putting myself in the place of the

heron and remaining still I have found that I could sometimes touch the fish and even have them nibble at my finger or toe, while an unexpected and sudden motion on my part would cause them to rapidly vanish. The cautious movement of the heron inviting confidence is the more readily productive of good results, while it is doubtful if the escaping fish in any degree realize that one of their companions has disappeared. They merely escaped a sudden motion of something larger than themselves, their own memory and knowledge being of the smallest.

Dark-bodied, day-feeding herons obtain their food almost entirely where the fringe of vegetation, sedges, bushes, or more distant tree tops, make a background and prevent the shape of the birds from affecting the skyline as seen by the prey. This is to a much less extent the case with the light-bodied and light-fronted species which are apt to feed largely at a distance from trees and bushes. In this latter phase of aggressive mimicry, whether the prospective victim is fish, reptile, or batrachian, stillness and caution are quite essential and the value of protective and simulative coloring is the same, for light colored birds, when motionless, harmonize with the colors of the sky as seen from the position of the prey. The sharp eyes of the heron search every likely spot; its absence of motion invites confidence, possibly some inclination to move; it has time to examine well, while its colors and markings, as viewed from in front and below, blend perfectly, or at least sufficiently, with its usual background, and an adequate amount of food is secured. The balance of trade is always in favor of the aggressor if his stock of patience is sufficient. The light patches and streaks on the neck front of some herons may be explained as a phase of aggressive mimicry. They serve to break up the contours and colors of the bird and suggest, instinctively, openings and irregularities in the background of vegetation.

Color mimicry would seem to be a station, somewhat different in different species, at which the color development was largely left at a very early period of its life's history. Assuming that the archaic ancestral bird was of a uniform tint with unspecialized feathers it would seem that as the specialization of the feathering developed so the color gradation tints necessarily came into effect, not for mimicry, however, but as a physiological result, the functions,

density, thickness, position, etc., determining. As the developing species or groups broadened out into different environments and thus came into interrelation with varied and numerous factors and enemies those best fitted to escape, however slight the difference, became collectively the progenitors of the mimicking and non-mimicking groups or species of later times. It would seem that the fixation of protective color gradation characters in feathers must have been an early one; in fact there is abundant good reason for believing that bright colors and feather specialization are more advanced conditions and of later development than the sober, simpler tints and feather shapes of mimicking birds. As color, or its absence, when the bird is in motion, is of little or no value in affording protection, it seems evident that the habit of keeping still in the presence of danger, real or fancied, must have been at a very early period instinctive and necessary in the developing groups of nonpredatory birds, an instinct antecedent to the specialization of feathers and probably derived from the weak, unspecialized and evidently reptilian-like ancestors. It may therefore be contended that colors in birds were not determined suddenly but by slow gradational stages as a result of increasing experience and forming habits, character of the food and the slow unconscious fitting to the environments. This instinctive habit of stillness seems to be an absolutely necessary feature of the life of the young of practically all ground birds, but often absent in the adults, as in gulls and terns. A young tern, for instance, instinctively remains motionless on our approach, and we may be sure that its ancestors have always done so also, but if handled for a time, it forgets its simulative caution and does not readapt itself unless released and allowed to escape. Its mimetic instinct becomes to a large extent lost in an unnatural condition of safety and captivity, because its life is spared, which is also an unnatural act.

Nestlings, when their hunger is appeased are quiet and crouching, they instinctively and quickly learn and obey the warning notes of their parents. They are easily aroused by the motion of the arriving parent, and sometimes by that of an intruder, but hunger and its probable alleviation is the cause. Unnecessary motion by the nestling is possibly dangerous to it, it may attract unfortunate attention, consequently we find that the parents are constantly

warning and the young are always being subdued. In this early training we can see the germ of individual mimicry, the necessity of keeping still, motion in the young being only permitted as the parents will. With ground birds the instinctive habit of stillness is stronger and more individual in the young. But with the functional development of the wing growth the tendency to stillness is gradually lost in many species for they can soon escape by active exertions.

Much could be written about the power of the eyes. Sometimes a bird can be easier approached by not looking at it. They seem to know instinctively that they are seen when one looks at them directly, but if they are under the impression that they are unseen one often has a better chance to get near them or to have them approach. As a boy I fooled my first crow, after an experience of repeated failures in attempting to shoot one, by walking by it, gun under my arm and looking everywhere but at the bird, and many instances of the kind might be given.

A protectively colored adult bird endeavors to escape imminent danger from an approaching predatory animal by assuming a quiet and crouching position while it is also watchful. The bird always has it in its power to escape suddenly, a common habit, provided it judges the danger point correctly; but a young wader, for example, has no such chance; it keeps motionless while in danger because that is an inherited characteristic and a result of the long experience of its kind under such circumstances. Its only method and instinctive hope of escape is by keeping still, together with its color resemblance to the surrounding ground, as any movement may be fatal, its enemy being always on the alert. But in rare cases its stillness may be fatal, as is evidenced in the following instance given me by Mr. S. M. Gronberger. With two friends he had landed on a rocky islet in Lake Roxen in Sweden which was inhabited almost solely by the Common Tern (*Sterna hirundo*) and the Common Sandpiper (*Actitis hypoleucos*). Attracted by the numerous adult birds they wandered over the islet and it was only the slippery condition of their shoe soles that showed them that they had unwittingly been crushing many eggs and young birds which up to that time they had not noticed.

A moving predatory bird or mammal has a very slight chance of

seeing a mimicking species unless it moves within its range of vision. Animals have the instinctive faculty of remaining motionless on or about the color that best suits them. Those which remain on areas distinctly of contrasting color with themselves necessarily incur a greater risk of being captured, therefore in the vast majority of present cases the mimicking bird is almost constantly on the ground color that harmonizes with its own coloration, and of which it is a mimic. One of the apparent exceptions to this that I have met with was in finding a young King Rail (*Rallus elegans*) which I captured in grass. Here the blackness of the bird was in great contrast to the green grass but the bird was astray and hungry. In the rails the young are black and at first thought it might seem that they are not protectively colored. As a matter of fact the black color fits in well with their true environment which is generally a blackish wet mud with numerous protective shadows of overhanging vegetation.

The power of mimicry is unconscious in the bird, that is, instinctive, a matter of acquired habit, though one readily gathers the impression that in many cases the bird must know that its coloration has a protective or simulative value. There is nothing protective about a Crow (*Corvus brachyrhynchos*) in its coloring, the bird is always evident, assertive and able to care for itself. A Quail (*Colinus*) is protectively colored and of retiring habit, it has learned as a species to keep still, trusting instinctively in its color similarity to its environment to prevent its enemy from seeing it, but on a closer and more dangerous approach it has other means of probable escape. It is of course impossible to believe that the bird is fully conscious of its simulative powers for, as in the case of a day old wader or tern, it has not had sufficient experience, but the instinct is there and we might for want of a better term call it instinctive reason as distinguished from pure reason which is based on thought and therefore deductive. To give an example. I have been lost in the woods. Realizing that condition I have looked about, instinctively determined, with no thought or reasoning, on a direction and made my way out with no difficulty. Yet on some occasions where the situation was very much more difficult or complex I have pondered and reasoned. It seems reasonable to assume that the bird follows a tendency which has proved successful for many generations of its ancestors. When not successful there is

of course no danger of that experience being transmitted to future generations, consequently stillness and protective mimicry as we see them exhibited is a record of innumerable successes only. Hence the habit once acquired in a very slight degree has, evidently because of its invariable success, been transmitted in a slowly intensifying degree and as a valuable attribute of nonpredatory forms to the descendants as we know them. Mimicry we may say is the result as well as the cause of the survival of the fittest, the failures having been eliminated.

Protective mimicry of the kind here considered, in combination with stillness, is an epitome of weakness and, even in this sense, the result as well as the cause. It is absolutely necessary for the preservation of many of the weaker and more defenceless species. It illustrates dread, lack of combativeness and aggressiveness and inability when exposed to danger to do much else of advantage. Mimicking species are usually quite common and, as we often speak of it, tame, and they propagate rapidly. On the other hand their predatory enemies have also advanced in their mimetic tendencies, usually aggressive.

It may be noted here that the parents in many cases, especially among ground species, successfully attract the attention of the marauder by feigning lameness and then using their power of flight to escape the deluded enemy. In perhaps all cases the warning cry of the parent bird is sufficient to functionize the, until then, latent mimetic propensity to stillness of its young.

In nonpredatory birds in which no simulative mimicry is evident, or very slight, the first law of preservation is unquestionably flight; they escape, or endeavor to do so, at the first indication of danger: while in birds whose colors and habits are in any way simulative and therefore entirely or largely protective, the first law of preservation is stillness even when there is great danger of being captured.

The point that I have here endeavored to emphasize especially is that protective resemblance (environmental mimicry), as to color, markings and shadings, is of little value generally unless it is combined with one other feature, the dominant factor, stillness.

A REPRINT OF THE ORNITHOLOGICAL WRITINGS
OF C. S. RAFINESQUE.

PART I.

BY CHARLES W. RICHMOND.

It has occurred to me that a reprint of the scattered and always more or less scarce ornithological writings of Rafinesque might serve not only to fill space, but prove of real value to the many students who cannot easily consult the originals. The publications of this eccentric author covered a period of nearly forty years of his truly checkered career,¹ from the time of his first landing in Philadelphia, in 1802, at the age of eighteen, to the time of his death, in the same city, in 1840. During this period he issued many independent tracts, and wrote papers for magazines and journals edited by him. The pamphlets were almost invariably printed for the author, and sold or distributed exclusively by him. They covered nearly every conceivable subject,² and are, for the most part, very scarce. One rarely finds them quoted in the old book catalogues, and few libraries appear to possess even a tolerably complete set of them. Several of the publications of this author contain bird matter, and it has long been my wish to see these fragments gathered together in some convenient medium, and made generally accessible to those who have occasion to consult them. Unfortunately, the opportunity to reprint this Rafinesque material comes at a time when I am unable to take up the items chronologic-

¹ Almost every event in Rafinesque's life appears to have been out of the ordinary. He was born near Constantinople, Oct. 22, 1783, and passed his early years chiefly in France and Italy, but visited Philadelphia in 1802, where he remained three years. He then became a resident of Sicily, living there until July, 1815, when he again sailed for the United States. After a stormy voyage of nearly four months, his vessel was wrecked off Long Island Sound, and he landed without property, books, or collections. After a long series of ups and downs, usually the latter, he finally drifted to Philadelphia, where he died in great poverty, in a garret of a house on Race Street, some time in September, 1840. Those who wish to follow in detail the career of this strange genius, should consult the 'Life and writings of Rafinesque,' by R. Ellsworth Call (Publication No. 10 of the Filson Club, Louisville), 1895, and Rafinesque's own account of his 'Life of Travels and Researches in North America and the South of Europe,' 1836.

² 'Thoughts on Atmospheric Dust,' 'On the different Lightnings observed in the Western States,' 'On the salvation of Horses,' 'On the oil of Pumpkin seeds,' 'Enquiries on the Galaxy or Milky-Way,' 'Genius and Spirit of the Hebrew Bible,' 'Pleasures and duties of Wealth,' 'American Manual of the Grape vines and the art of making Wine,' and 'Safe Banking, including the principles of Wealth' are the titles of some of them!

ally, so, instead of beginning with his first contribution, published in 1803, I shall have to let the bird portion of his 'Analyse' suffice for this number.

The 'Analyse' was issued some time between April¹ and July, 1815, and in all probability very few copies were sent out to prominent naturalists and correspondents before he sailed for America on the 21st of July. The remainder of the edition, together with all of his collections, books, and personal belongings, were lost in the wreck of the vessel on which he had taken passage. In his 'Circular Address on Botany and Zoölogy,'² published in the following year, he says it was "published in Palermo in the early part of 1815." In the same 'Circular,' explanatory of the scope of the 'Analyse,' he writes: "This work is the outline of a larger one on the plan of the *Systema Naturae* of Linneus, which will be gradually undertaken at a future period. I have endeavoured to trace in it a new general and natural method, for the study of nature, animals and plants. In dividing these in ten classes each, I have introduced a peculiar and complete nomenclature for the classes, orders and families of organised bodies, giving each a substantive Latin name: a great number of new genera are likewise proposed. A second edition of this work will probably be published within a few years in English." Had his plans been fully carried out, Rafinesque's names would be much better known than they are at the present day, and our nomenclature would bristle with Rafinesquian genera, since he showed a discrimination of generic groups far in advance of his time. The fact remains, however, that in the present work he merely indicated these new generic names (with a few exceptions) as *nomina nuda*, and never afterwards referred to them.

The 'Analyse' was originally issued in brown paper covers, as is shown by the copy formerly in the library of the Rev. Manasseh Cutler, one of Rafinesque's American correspondents, and now in the Library of Congress. The copy from which the present reprint is made is in my possession, and has the name "G. Cuvier" stamped upon its title page.

¹ It is my impression that I have seen somewhere in Rafinesque's writings a statement that the manuscript of the 'Analyse' was completed in April, but I cannot now verify it.

² Reprinted in Oken's *Isis*, 1819, in 'Litterarischer Anzeiger Nos. XV and XVI, following Heft 8.

ANALYSE | DE LA NATURE | OU | TABLEAU DE L'UNI-
VERS | ET | DES CORPS ORGANISÉS | ———— | PAR C.
S. RAFINESQUE | De l'Institut des Sciences naturelles de
Naples, et | de la Société Italienne des Sciences et des arts. |
———— ———— | *La Nature est mon guide, et*
Linnéus mon maître. | ———— ———— |
PALERME | 1815 | ++++++ | Aux dépens
de l'Auteur. | — 8°, pp. 224.

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IV. 2. *Classe. ORNITHIA. Les Oiseaux.*

Les Oiseaux composent une Classe très-distincte et isolée d'Animaux vertèbrés, car ils sont les seuls qui aient un corps couvert de plumes, et muni de deux ailes emplumées et empennées: tous leurs autres caractères, ne sont plus exclusifs; mais communs avec quelqu'autres animaux vertèbrés.

Ils different en outre des Mammifères par leur génération ovipare, c'est-à dire que leurs femelles pondent des œufs couverts d'une enveloppe calcaire, et renfermant des germes qui se développent par l'incubation; produisant des jeunes oiseaux, qui n'ont pas besoin de lait pour se nourrir: ainsi ces animaux sont dépourvus de mamelles, et ces organes n'existent plus dans aucune classe.

Ces Animaux ont la bouche dépourvue de dents, de machoires et de lèvres, et conformée en un bec consistant en deux mandibules cornées posées l'une sur l'autre et dont la supérieure porte les narines; leur tête offre quelquefois des crêtes, des huppés ou des places déplumées: leur corps pose sur deux membres postérieurs (les antérieurs étant changés en ailes) dont les jambes sont *scutipèdes* lorsqu'elles sont couvertes d'écailles semi-circulaires, ou *rétipèdes* lorsqu'elles sont recouvertes de petites écailles en réseau, *plumipèdes* lorsqu'elles sont couvertes de plumes ou duvet, au moins jusqu'au ta-

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lon, et *nudipèdes* lorsque les plumes n'atteignent pas le talon. Les pieds sont divisés en doigts toujours munis d'ongles et au nombre de 2 à 4, dont 2 ou 3 situés antérieurement, et souvent 1 ou deux postérieurement: ils se nomment *palmés* lorsque des membranes les unissent, *demi-palmés* quand'elles n'unissent que leurs bases, *soudés* quand ils sont plus ou moins réunis entr'eux, et *libres* quand ils sont entièrement divisés. Ils n'ont qu'un orifice excrémental et générateur ou cloaque; et ils ont presque toujours une queue composée de longues pennes. Les pennes ne diffèrent des plumes que par une majeure dimension.

A l'égard de leur organisation interne, elle est semblable à celles des Mammifères, ayant comme eux le cœur à deux ventricules et le sang chaud, un cerveau remplissant la cavité du crâne et des nerfs aboutissant à une moelle épinière; mais ils ont les poumons adhérens et percés, sans diaphragme dans la cavité pectorale, et ils sont dénués de vessie urinaire.

Leur intelligence est inférieure à celle des Mammifères; mais leur voix est souvent plus variée, et ne la cède qu'à celle de l'homme, elle se modifie en différens cris, sifflements, roucoulements chants, ramages.....

Ces Animaux n'avaient été classés que systématiquement avant Duméril, il est le seul qui ait essayé de les disposer par familles, et nonobstant les travaux de Linnéus, Brisson, Latham, Scopoli, Lacepède, Daudin...: sur leurs Genres, il m'a fallu les refondre presque en entier, pour les disposer et classer convenablement selon leurs rapports naturels. J'en commencerai la série par la famille des *Psittacins*, cette famille méritant d'occuper cette première place par son intelligence su-

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périeure, ses facultés et ses mœurs, ce qui l'assimile à la famille des *Singes* parmi les Mammifères, la quelle y serait la première si l'Homme n'avait la préséance: des Ornithologistes ont cru qu'il convenait d'attribuer la préséance parmi les Orseaux à la puissance (Linnéus, Latham, Daudin, Duméril) et ils l'ont accordée aux *Rapaces*, d'autres à la grandeur tel que Schœffer....et ils ont placé l'Autruche à leur tête; mais autant vaudrait commencer la série des Mammifères par le Lion, l'Éléphant ou la Baleine! ainsi j'adopte l'opinion de Lapeyrou, qui accorde cette préséance à l'intelligence.

TABLEAU DES ORDRES.

1. Sous-classe. PLUMIPEDIA. Les PLUMIPÈDES. Jambes plumipèdes, couvertes de plumes jusqu'au talon et quelquefois jusqu'aux doigts, pieds ordinairement scutipèdes, plus rarement retipèdes: quelquefois 2 doigts postérieurs, les antérieurs jamais entièrement palmés, ni très-longs quand le bec l'est aussi.

I. Ordre. SCANSORIPEDIA. Les SCANSORIPÈDES. Pieds communément tetradactyles, quelquefois tridactyles, dont 2 doigts libres antérieurs, et 1 ou 2 postérieurs.

II. Ordre GRESSORIPEDIA. Les GRESSORIPÈDES. Pieds communément 4-dactyles, rarement 3-dactyles, dont 2 ou 3 doigts antérieurs entièrement soudés, et un seul postérieur.

III. Ordre. SEDILIPEDIA. Les SEDILIPÈDES. Pieds communément 4-dactyles, rarement 3-dactyles, dont 3 ou 4 doigts antérieurs, aucun desquels n'est entièrement soudé, et 1 ou aucun postérieur.

2. Sous-classe. NUDIPEDIA. Les NUDIPÈDES.

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Jambes nudipèdes, nues au dessus du talon, pieds ordinairement rétipèdes rarement scutipèdes, jamais 2 doigts postérieurs, les antérieurs jamais entièrement palmés, quelquefois très-longs ainsi que le bec, ou bordés par des membranes.

IV. Ordre. CURSORIPEDIA. Les CURSORIPÈDES. Pieds à 2, 3, ou quatre doigts, dont 2 ou 3 sont antérieurs et sans membranes à leur base ni bordure, 1 ou aucun postérieur.

V. Ordre. VADIPEDIA. Les VADIPÈDES. Pieds tridactyles, ou 4-dactyles, 3 doigts antérieurs bordés par des membranes 1 ou aucun postérieur.

3. Sous-classe. REMIPEDIA. Les REMIPÈDES. Jambes un peu nudipèdes, ou dénués de plumes sur le talon; pieds rétipèdes, quelquefois 4 doigts antérieurs, tous les doigts antérieurs palmés ou réunis par des larges membranes atteignant ordinairement jusqu'aux ongles.

VII. Ordre. PALMIPEDIA. Les PALMIPÈDES. Pieds à 3 doigts antérieurs palmés, 1 postérieur libre ou aucun.

VIII. Ordre. FLABELLIPEDIA. Les FLABELLIPÈDES. Pieds à 4 doigts antérieurs palmés, aucun postérieur.

TABLEAU DES FAMILLES ET DES GENRES.

I. O. SCANSORIPEDIA. Les Scansoripèdes.

1. Sous-ordre. ADUNCIROSTRIA. Les *Aduncirostres*. Bec crochu.

1. Famille. PSITTACEA. Les *Psittacins*. Bec à mandibule supérieure convexe très-crochue mobile; langue charnue; pieds rétipèdes.

1. Sous-famille. PLUMIGENIA. Les *Plumigènes*. Joues emplumées. 1. *Psittacus* L. 2. *Catacus* R. *Cacatoes* Dum. 3. *Arimanus*. R. 4. *Cephanomus* R. 5. *Protalmus* R.

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2. Sous-famille. NUDIGENIA. Les *Nudigènes*.
Joues nues. G. 6. *Paracus* R. Ara Lac. 7. *Maracanus* R. 8. *Glossiphus* R.

2. Sous-Ordre. CURVIROSTRIA. Les *Curvirostrés*.
Bec plus ou moins courbé, ou dentelé: pieds presque toujours scutipèdes.

2. Famille. IDORAMPHIA. Les *Idoramphes*.
Bec échancré vers son extrémité, quelquefois doublement; jamais énorme, ni légers ni serreté. G. 1. *Rincoptyx* R. 2. *Bucco* L. 3. *Tamatia* R. sp. do. 4. *Ramphisma* R. sp. do. 5. *Macropogon* R. sp. do.

3. Famille. CENORAMPHIA. Les *Cénoramphes*.
Bec énorme et léger, ou serreté.

1. Sous-famille. TURACEA. Les *Touraciens*.
Bec serreté; mais proportionné. G. 1. *Turacus* Lac. 1. *Curucus* R. 3. *Musophaga* Lath. 4. *Balitus* R.

2. Sous-famille. PRIONAMPHIA. Les *Prionamphes*.
Bec grand et serreté. G. 5. *Ramphastus* L. 6. *Cenoramphus* R. sp. do.

3. Sous-famille. MEGAMPHIA. Les *Mégamphes*.
Bec grand non serreté. G. 7. *Aracarius* R. 8. *Scythrops* Lath.

4. Famille. ISORAMPHIA. Les *Isoramphes*.
Bec proportionné, ni échancré ni serreté.

1. Sous-famille. CRUPHORINIA. Les *Cruphorins*.
Narines recouvertes de plumes ou de poils. G. 1. *Crotophagus* L. 2. *Trogon* L. 3. *Quaxotus* R. 4. *Meliphagus* R. 3. *Cephalax* R.

2. Sous-famille. RIMNIA. Les *Rimniens*.
Narines nues. 6. *Cuculus* L. 7. *Edolius* R. sp. do. 8. *Morocus* R. sp. do. 9. *Ramphimatus* R. sp. do. 10. *Huhus* L. sp. do. 11. *Atinganus* R. sp. do. 12. *Cuaris* R. sp. do. 13. *Diploxus* R. sp. do. 14. *Calliptera* R.

3. Sous-ordre. CUNEIROSTRIA. Les *Cuneirostrés*.
Bec droit, jamais serreté, ordinairement cuneiforme; pieds scutipèdes.

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5. Famille. SPHENORAMPHIA. Les *Sphénoramphes*. Bec pointu, souvent cuneiforme et anguleux. G. 1. *Picus* L. 2. *Dinopium* R. *Picoides* Lac. 3. *Yunx* L. 4. *Galbula* L.

II. O. GRESSORIPEDIA. Les Gressoripèdes.

6. Famille. PLATYPODIA. Les *Platypodes*.
Bec droit ni dentelé ni cornu.

1. Sous-famille. ALCEDIA. Les *Alcédiens*. Bec comprimé ou non déprimé. G. 1. *Alcedo* L. 2. *Alcyon* R. sp. do. 3. *Ispida* R. sp. do. 4. *Kerytus* R. sp. do. 5. *Ceyx* Lac.

2. Sous-famille. PLATAMPHIA. Les *Platamphes*. Bec déprimé. G. 6. *Todus* L. 7. *Platamphus* R. sp. do. 8. *Oxamphus* R.

7. Famille. CORTAMPHIA. Les *Cortamphes*. Bec courbé, ni dentelé ni cornu.

1. Sous-famille. PIPRARIA. Les *Pipracés*. Bec court et crochu. G. 1. *Pipra* L. 2. *Manacus* Bris. 3. *Antolita* R. sp. do.

2. Sous-famille. MEROPIA. Les *Méropiens*. Bec allongé et grêle. G. 4. *Merops* L. 5. *Phlorus* R. sp. do. 6. *Chadirus* R. sp. do. 7. *Patricus* R. sp. do. 7. *Ceratops* R. sp. do. 7. *Dicreadium* R. sp. do.

8. Famille. CERODONA. Les *Cérodones*.
Bec cornu ou dentelé.

1. Sous-famille. DIPLAMPHA. *Diplamphus*. Bec non dentelé. G. 1. *Ramphanodus* R. 2. *Rincortus* R. 3. *Calopus* R.

2. Sous-famille. BUCERONIA. Les *Bucériens*. Bec cornu et dentelé. G. 4. *Buceros* L. 5. *Diramphus* R. sp. do. 6. *Pogophthalmus* R. sp. do. 9. *Ramphalax* R. sp. do. 8. *Dactalum?* R. sp. do. 7. *Albagum* R. sp. do.

3. Sous-famille. ACERAMPHA. Les *Acéramphes*.

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Bec dentelé et sans cornes G. 10. *Gingala* R. 11. *Momotus* Lac.

III. O. SEDILIPEDIA. Les Sédilipèdes.

1. Sous-ordre. ELTREMA. Les *Eltrémiens*. Pieds scutipèdes ou annelés, à 2 ou 3 doigts antérieurs soudés à leur base.

9. Famille. GLYPHORAMPHYA. Les *Glyphoramphes*. Bec à mandibule supérieure échancrée ou dentée, non subulé.

1. Sous-famille. OLYPHIA. Les *Polyphes*. Bec à plusieurs échancrures ou denté. G. 1. *Phytotoma* L. 2. *Nucifraga* R. 3. *Collurio* R.

2. Sous-famille. LANIDIA. Les *Lanidiens*. Bec non comprimé, ni déprimé G. 4. *Lanius* 5. *Vibranis* R. sp. do. 6. *Drongus* R. sp. do. 7. *Glandarius* R. 8. *Merulus* R. 9. *Tanagra* L. 10. *Strepera* R. 11. *Malimbus* R. 12. *Argyramphus* R. 13. *Sideropsis* R. 14. *Cossyphus* R. 15. *Derimanus* R. 16. *Copsicus* R. 17. *Cepsua* R. 18. *Ixosorus*. 19. *Lepageus* R. 20. *Siopornis* R.

3. Sous-famille. RAMPHOMALIA. Les *Ramphomales*. Bec déprime. G. 21. *Muscicapa* L. 22. *Muscivora* R. 23. *Tyrannus* R. 24. *Rincopogon* R. 25. *Ampelis* L. 26. *Cotinga* R. 27. *Averanus* R. 28. *Platorincus* R.

4. Sous-famille. TURDINIA. Les *Turdiens*. Bec comprimé. 29. *Turdus* L. 30. *Myrmisus* R. 31. *Manucodius* R.

10. Famille. CONORAMPHIA. Les *Conirotres*. Bec sans échancrures, plus ou moins conique.

1. Sous-famille. CORACINIA. *Coraces*. Bec comprimé. G. 1. *Coracias* L. 2. *Becardia* R. 3. *Gonotrimphus* R. 4. *Paradisea*. L. 5. *Nemoderus* R. L. 6. *Caryocates* R. 7. *Cinclus* R. 8. *Corvus* L.

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9. *Kinkus* R. 10. *Corbivus* R. 11. *Cravus* R. 12. *Gracula* L. 13. *Mainatus* R. 14. *Atthisus* R. 15. *Mesorina* R. 16. *Cepharcus* R. 17. *Gymnoderus* Geof. 18. *Gymnocephalus* Geof. 19. *Cephalopterus* Geof.

2. Sous-famille. STURNIDIA. Les *Sturniens*. Bec allongé, non comprimé. 20. *Glaucopis* L. 21. *Buphaga* L. 22. *Oriolus* L. 23. *Sturnus* L. *Quiscalis* R. 24. *Calleas* R. 25. *Icterus* Daud. 26. *Cacicus* Daud. 27. *Xanthornus* R. 28. *Cinclus* R.

3. Sous-famille. PASSERNIA. Les *Passeraux*. Bec vraiment conique, non comprimé. G. 29. *Colius* L. 30. *Pyrrhula* R. 28. *Loxia* L. 31. *Crucirostra* Daud. 32. *Passer* R. 33. *Fringilla* L. 34. *Sizeris* R. 35. *Emberiza* L. 36. *Psitamphus* R. 37. *Bengalis* R. 38. *Calandra* R.

11. Famille. LEPTORAMPHIA. Les *Leptoramphes*. Bec subulé ou menu, et très-long, rarement échancré.

1. Sous-famille. RAPHIORAMPHIA. Les *Raphioramphes*. Bec droit. G. 1. *Parus* L. 2. *Igithalus* R. 3. *Alauda* L. 4. *Psoridus* R. *Sylvia* Lath. 6. *Motacilla* L. 7. *Oïtrus* R. 8. *Otimus* R. 9. *Criopus* R. 10. *Sittella* R. *Sitta* L. 11. *Baristus* R. 12. *Talapius* R. 13. *Polytmus* Bris. 14. *Mellisuga* R.

2. Sous-famille. TOXORAMPHIA. Les *Toxoramphes*. Bec courbé ou arqué. G. 15. *Trochilus*. L. 16. *Certhia* L. 17. *Sovimanga*. R. 18. *Heorotarius* R. 19. *Guitus* R. 20. *Mactylus* R. 21. *Promerops* L. 22. *Upupa* L.

2. Sous-Ordre. FISSIDACTYLA. Les *Fissidactyles*. Pieds scutipèdes à doigts antérieurement divisés, sans membranes, ni soudés.

12. Famille. BREVIPEDIA. Les *Brevipèdes*. Bec large et plat à la base; pieds courts.

1. Sous-famille. HIRUNDIA. Les *Hirundiens*.

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3. doigts antérieurs, 1 postérieur G. 1. *Hirundo* L.
2. *Caprimulgus* L. 3. *Agotilax* R. 4. *Ibijus* R. 5
Drepanis R.

2. Sous-famille. PREHENSIPEDIA. Les *Préhensi-
pèdes*. 4. Doigts antérieurs, aucun postérieur. G.
6. *Brachopus* R.

13. Famille. PERISTERIA. Les *Colombins*.
Bec non aplati, pieds proportionnés. G. 1. *Columba* L. 2. *Rukula* R. sp. do. 3. *Myriphaga* R. sp. do.

3. Sous-ordre. MESONDRIA. Les *Mèsondres*. Pieds
retipèdes à deux ou trois doigts antérieurs, réunis
à leur base par des courtes membranes.

14. Famille, RAPACEA. Les *Rapaces*. Pieds
à deux doigts réunis par des membranes; bec
très-crochu.

1. Sous-famille. ORNYCTIA. Les *Ornyctiens*.
Yeux dirigés en avant. G. 1. *Strix* L. 2. *Bacamus*
R. 3. *Pteropogon* R. sp. do. 4. *Bubotus* R.
Bubo Dum. 5. *Surnia* Dum.

2. Sous-famille. CRUPHODERIA. Les *Plumicolles*.
Yeux latéraux, tête et cou emplumés. G. 6. *Falco*
L. 7. *Milvus* R. 8. *Phenes* R. 9. *Idophus* R.
10. *Tanasus* R. 11. *Gypaetus* Lac. 22. *Aquila* Bris.

3. Sous-famille. PTILODERIA. Les *Nudicolles*.
Yeux latéraux, tête ou cou nus. G. 13. *Gymnasa*
R. 14. *Plancus* R. 15. *Derotis* R. 16. *Percnopte-
rus* R. 17. *Vultur* L. 18. *Sarcoramphus* Dum.

15. Famille. GALLINACEA. Les *Gallina-
cés*. Les 3. doigts antérieurs réunis à leur base
par des membranes.

1. Sous-famille. ALECTRIA. Les *Alectriens*.
Quelque partie de la tête nue. G. 1. *Gallus* R.
2. *Phasianus* L. 3. *Argus* R. 4. *Tetrao* L. 5. *Per-
dix* Lac. 6. *Turnix* R. *Tridactilis* Lac. 7. *Tinamus*
Lac. 8. *Meleagris* L. 9. *Ganix* R. *Guan* Lac.

2. Sous-famille. CRAXIA. Les *Craxiens*. Front

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cère ou osseux. G. 10. *Crax* L. 11. *Aetopsis* R. 12. *Numida*.

3. Sous-famille. PAVOSIA. Les *Pavosiens*. Tête et front emplumés G. 13. *Menura* Lath. 14. *Pavo* L. 15. *Penelope*.

IV: O. CURSORIPEDIA. Les Cursoripèdes.

16. Famille. BRACHYPTERIA. Les *Brachyptères*. Ailes courtes et impropres pour le vol. G. 1. *Struthio* L. 2. *Tuyus* R. *Rhea* L. 3. *Casearius*. Bris. 4. *Odopus* R. 5. *Didus* L.

17. Famille. SCOLOPACEA. Les *Scolopacés*. Ailes propres au vol.

1. Sous-famille. OTIDIA. Les *Otidés*. Bec crochu ou courbé. G. 1. *Otidus* R. *Otis* L. 2. *Psophia*. L. 3. *Palamedea* L. 4. *Serpentarius* Lath. 5. *Cariama* R. 6. *Glareola* L. 7. *Chionis* Forster. *Vaginalis* Lath. 8. *Chavaria* R.

2. Sous-famille. RALLIA. Les *Ralliens*. Bec droit allongé. G. 9. *Jacana* R. *Parra* L. 10. *Scolopax* L. 11. *Rallus* L. 12. *Porphyrio* Bris.

V. O. VADIPEDIA. Les Vadipèdes.

18. Famille. LATIROSTRIA. Les *Latirostres*. Bec large ou ouvert, doigts non bordés.

1. Sous-famille. HIANTIROSTRIA. Les *Hiantirostres*. Bec ouvert G. 1. *Empharis* L. *Hians*. Dum. 2. *Odorincus* R.

2. Sous-famille. SPATULACEA. Les *Spatulacés*. Bec non ouvert. G. 3. *Platalea* L. 4. *Cancroma* L.

19. Famille. FALCIROSTRIA. Les *Falcirostres*. Bec étroit et courbé, doigts non bordés.

1. Sous-famille. EPITOXIA. Les *Epitoxes*. Bec

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courbé en dessus. G. 1. *Mycteria*. L. 2. *Bargea* R. 3. *Totanus*.

2. Sous-famille. HYPOTOXIA. Les *Hypotoxes*.
Bec courbé en dessus ou en bas. G. 4. *Tantalus*
L. 5. *Dermodera* R. 6. *Macrotarsus* Lac. 7. *Nu-*
menius Scop. 8. *Curlirius* R.

20. Famille. GRALLEA. Les *Echassiers*.
Bec étroit et droit, doigts non bordés.

1. Sous-famille. TRINGARIA. Les *Tringacés*. Bec
non conformé en couteau. G. 1. *Tringa* L. 2.
Charadrius L. 3. *Bynamphus* R. 4. *Calidris* R. 5.
Cursorius Lath. 6. *Hæmatopus* L. 7. *Himantopus*
R. 8. *Ochropus* R. 9. *Hemondra* R. 10. *Vanellus*
R. 11. *Ortignum* R. 12. *Dactemia* R. 13. *Hydro-*
sora R. 14. *Oedinecmus* R.

2. Sous-famille. CULTRIROSTRIA. Les *Cultri-*
rostrés. Bec conformé en couteau, ou très-compri-
mé. G. 15. *Ardea* L. 16. *Ciconia* Lac. 17. *Grus*
Lac. 18. *Nycticorax* R. 19. *Helias* R. 20. *Barga*
R. 21. *Umbretta* R. *Scopus* L. 22. *Balearius* R.

21. Famille. PINNIPEDIA. Les *Pinnipèdes*.
Doigts bordés par des membranes souvent lobées.
G. 1. *Fulica* L. 2. *Phalaropus* Lac. 3. *Gallinu-*
la Bris. 4. *Podiceps* Lath.

VI. O. PALMIPEDIA. Les *Palmipèdes*.

22. Famille. CLUNIPEDIA. Les *Clunipèdes*.
Jambes situées sous le croupion; bec non serreté.

1. Sous-famille. BREVIPENNIA. Les *Plongeurs*.
Ailes courtes; mais propres au vol. G. 1. *Co-*
lymbus L. 2. *Urinator* Lath.

2. Sous-famille. APTERINIA. Les *Aptériens*.
Ailes très-courtes, souvent sans plumes et impro-
pres au vol. G. 3. *Alca* L. 4. *Pinguinus* R. *Pin-*
guin Lac. 5. *Aptenodytes* L. 6. *Spheniscus* R. sp. do.

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23. Famille. SERRIROSTRIA. Les *Serrirostres*. Bec serreté: jambes souvent situées en arriere.

1. Sous-famille. LOPHALIA. Les *Lophaliens*. Bec large, des crêtes ou parties nues sur la tête. G. 1. *Cygnus* L. 2. *Sarcopogon* R. 3. *Lophalus*. R. 4. *Epirincus* R. 5. *Hemniphas* R. 6. *Pleptera* R. 7. *Nessarius* R.

2. Sous-famille. ANSERINIA. Les *Ansèriens*. Bec large, sans crêtes ni places nues sur la tête. G. 8. *Anseria* R. 9. *Anassus* R. *Anas* L. 10. *Camploris* R. 11. *Solmorincus* R.

3. Sous-famille. MERGIDIA. Les *Mergiens*. Bec étroit. G. 12. *Mergus* L. 13. *Priamphus* R. *Prion* Lac. 14. *Phenicopterus* L.

24. Famille. MESOPODIA. Les *Mésopodes*. Bec non serreté, pieds sous le ventre.

1. Sous-famille. PETRELIA. Les *Pétréliens*. Bec courbé ou crochu. G. 2. *Recurvirostra* L. 2. *Diomedea* L. 3. *Onocralus* R. *Pelecanoides* Lac. 4. *Procellaria* L. 5. *Puffinus* R. sp. do. 6. *Merotias* R. 7. *Labbus* R.

2. Sous-famille. LARIDIA. Les *Laridiens*. Bec droit et non crochu. G. 8. *Larus* L. 9. *Sterna* L. 10. *Nodinus* R. sp. do. 11. *Rhynchops* L.

VIII. O. FLABELLIPEDIA. Les Flabellipèdes.

25. Famille. PTIOPODIA. Les *Ptiopodes*.

1. Sous-famille. PELICANEA. Les *Pêlicaniens*. Bec non serreté. G. 1. *Fregata* Lac. 2. *Carbonarius* R. *Carbo* Lac. 3. *Pelecanus* L.

2. Sous famille PLOTTIDIA. Les *Plottidiens*. Bec serreté. G. 4. *Sularius* R. *Sula* Lac. 5. *Phacton* L. 6. *Plottus* L.

En tout 270 Genres.

[p. 219, under "Additions et Corrections."]

pag. 65. l. 32.—*Huhus* L.—*Onixylus* R.

pag. 66. l. 26.— DIPLAMPHA. *Diplamphus* — lisez —
DIPLAMPHIA. Les *Diplamphes*.

. l. 28.—*Calopus* — lisez — *Calapus*.

pag. 67. l. 10.— OLYPHIA — lisez — POLYPHIA.

pag. 68. l. 11.—PASSERNIA — lisez — PASSERIA.

. l. 21.—Ajoutez avant *Parus* L.—*Parulus* L.

. 1. 23.—*Oïtrus* R.—lisez — *Philomela* R.

. do.—*Otimus* R.—lisez —*Otymnus* R.

. do — *Cripolus* R.— lisez — *Cnipolus* R.

pag. 69. l. 33.—*Arqus* R.—lisez —*Argusianus* R.

pag. 70. l. 5.—Ajoutez avant *Pavo* L.—*Pavianus* L.

pag. 71. l. 12.—*Himantopus* R.—lisez —*Himantellus* L.

. l. 19.—*Helias* R.—lisez —*Ornelias* R.

On page 216, under "Abbreviations," he gives "Sp. do." as standing for "Espèces du Genre précédent."

NOTES ON THE ABOVE REPRINT.

Several errors, especially of authority for generic names, are noticeable in this work. Thus, *Huhus* (p. 65), *Empharis* (p. 70), *Parulus*, *Pavianus*, and *Himantellus* (p. 219) should be credited to "R." instead of "L." In other cases, names previously used by Brisson, Lacépède, Cuvier, and others, are here credited to "R." These are enumerated in the list of Rafinesque's new genera given below, since they are so designated by him. Examples of this class are *Passer* "R.", *Muscivora* "R.", *Tyrannus* "R.", *Calidris* "R.", and *Cinclus* "R.", the last name being used for no less than three genera. *Ixosorus* (p. 67) has no authority cited for it, but is obviously new. There are a few other evident slips, not corrected by the author, such as *Loxia*, page 68, numbered "28." On the same page, "*Psoridus* R." is ostensibly a substitute name for "*Sylvia* Lath.," but in this case the figure "5" has been clearly omitted before the word *Sylvia*. This correction would give *Psoridus* the rank of a nomen nudum. Another slip on page 68

is not so easily explained. "*Quiscalis* R." appears as a substitute name for "*Sturnus* L.", although in this one case, Rafinesque's new name follows the old one, instead of preceding it. There is no break in the numbers of the genera of the "sous-famille" containing this name, and while the author's intention was doubtless to introduce *Quiscalis* as a genus additional to *Sturnus*, what he actually did was to rename the latter. *Quiscalis* of Rafinesque antedates *Quiscalus* Vieillot by one year.

Several emendations or misprints occur, such as *Guan*, *Phacton*, *Plotus*, and *Crotophagus*, for *Gouan*, *Phaeton*, *Plotus*, and *Crotophaga*, respectively.

Rafinesque apparently instituted 181 new bird genera in the 'Analyse.' Of this number, only 20 are properly introduced, being substitute names for others too long or too short to suit the author, or otherwise falling short of the requirements laid down in his 'Principes Fondamentaux' of 1814. Of the remainder, 126 are pure nomina nuda, and 35 are based on unnamed species of the preceding genus ("Sp. do."). Many of these can be recognized, from the author's habit of giving a vernacular name of the species in Latin form. Thus, *Morocus* is doubtless based on the "Moroc" of Bruce (*Cuculus indicator* Sparrman); *Atingamus* is probably the "Atingacu" of Marcgrave (*Cuculus cornutus* Linnaeus); *Quaxotus* appears to be derived from the "Quaxoxotototl" of Hernandez (= *Pharomachrus*?), etc.

List of New Bird Genera proposed in the 'Analyse.'

Names preceded by an asterisk are citable in nomenclature, those marked by a dagger are based on "Sp. do." and the remainder are nomina nuda.

Aetopsis, p. 70.	Aracarius, p. 65.
Agotilax, p. 69.	Argus, p. 69.
†Albagum, p. 66.	(Changed to <i>Argusianus</i>
†Alcyon, p. 66.	on p. 219.)
*Anassus, p. 72.	Argusianus, p. 219.
Anseria, p. 72. ¹	Argyramphus, p. 67.
†Antolta, p. 66.	Arimanus, p. 64.

¹ *Anseria* was first used in 1814, as a substitute for *Anser* Brisson.

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|---------------------------------|----------------------------------|
| †Atinganus, p. 65. | Collurio, p. 67. |
| Atthisus, p. 68. | Copsicus, p. 67. |
| Averanus, p. 67. | Corbivus, p. 68. |
| Bacamus, p. 69. | Cossyphus, p. 67. |
| Balearius, p. 71. | Cotinga, p. 67. |
| Balitus, p. 65. | Cravus, p. 68. |
| Bargea, p. 71. | Cripolus, p. 68. |
| Baristus, p. 68. | (Corrected to <i>Cnipolus</i> on |
| Becardia, p. 67. | p. 219.) |
| Bengalis, p. 68. | †Cuaris, p. 65. |
| Blarga, p. 71. | Curlirius, p. 71. |
| Brachopus, p. 69. | Curucus, p. 65. |
| *Bubotus, p. 69. | †Dactalum, p. 66. |
| Bynamphus, p. 71. | Dactemia, p. 71. |
| Calandra, p. 68. | Derimanus, p. 67. |
| Calidris, p. 71. | Dermodera, p. 71. |
| Calleas, p. 68. | Derotis, p. 69, |
| Calliptera, p. 65. | †Dicreadium, p. 66. |
| Calopus, p. 66. | *Dinopium, p. 66. ¹ |
| (Corrected to <i>Calapus</i> on | †Diploxus, p. 65. |
| p. 219.) | †Diramphus, p. 66. |
| Camploris, p. 72. | Drepanis, p. 69. |
| *Carbonarius, p. 72. | †Drongus, p. 67. |
| Cariama, p. 70. | †Edolius, p. 65. |
| Caryocactes, p. 67. | *Empharis, p. 70. |
| *Catacus, p. 64. | Epirincus, p. 72. |
| †Cenoramphus, p. 65. | Gallus, p. 69. |
| Cephalax, p. 65. | *Ganix, p. 69. |
| Cephanomus, p. 64. | Gingala, p. 67. |
| Cepharcus, p. 68. | Glandarius, p. 67. |
| Cepsua, p. 67. | Glossiphus, p. 65. |
| †Ceratops, p. 66. | Gonotrimphus, p. 67. |
| †Chadirus, p. 66. | Guitus, p. 68. |
| Chavaria, p. 70. | Gymnasa, p. 69. |
| Cinclus, p. 67. | Helias, p. 71. |
| Cinclus, p. 68. | (Changed to <i>Ornelias</i> on |
| Cnipolus, p. 219. | p. 219.) |
| (= <i>Cripolus</i> of p. 68.) | Hemniphas, p. 72. |

¹ *Dinopium* dates from 1814, and will be mentioned later.

- Hemondra, p. 71.
 Heorotarius, p. 68.
 Himantellus, p. 219.
 Himantopus, p. 71.
 (Changed to *Himantellus* on
 p. 219.)
 †Huhus, p. 65.
 (Changed to *Onixylus* on
 p. 219.)
 Hydrosora, p. 71.
 Ibijus, p. 69.
 Idoplus, p. 69.
 Igitalus, p. 68.
 †Ispida, p. 66.
 Ixosorus, p. 67.
 *Jacana, p. 70.
 †Kerytus, p. 66.
 Kinkus, p. 68.
 Labbus, p. 72.
 Lepageus, p. 67.
 Lophalus, p. 72.
 †Macropogon, p. 65.
 Mactylus, p. 68.
 Malimbus, p. 67.
 Manucodus, p. 67.
 Maracanus, p. 65.
 Mel phagus, p. 65.
 Mellisuga, p. 68.
 Merotias, p. 72.
 Merulus, p. 67.
 Mesorina, p. 68.
 Milvus, p. 69.
 †Morocus, p. 65.
 Muscivora, p. 67.
 †Myriphaga, p. 69.
 Myrm'sus, p. 67.
 Nemoderus, p. 67.
 Nessarius, p. 72.
 †Nodinus, p. 72.
 Nycticorax, p. 71.
 Ochropus, p. 71.
 Odopus, p. 70.
 Odorincus, p. 70.
 Oedinecmus, p. 71.
 Oïtrus, p. 68.
 (Changed to *Philomela* on
 p. 219.)
 Onixylus, p. 219.
 (= *Huhus* of p. 65.)
 *Onocralus, p. 72.
 Ornelias, p. 219.
 (= *Helias* of p. 71.)
 Ortigum, p. 71.
 *Otidus, p. 70.
 Otimus, p. 68.
 (Corrected to *Otymnus* on
 p. 219.)
 Oxamphus, p. 66.
 *Paracus, p. 65.
 *Parulus, p. 219.
 Passer, p. 68.
 †Patricus, p. 66.
 *Pavianus, p. 219.
 Percnopterus, p. 69.
 Phenes, p. 69.
 Philomela, p. 219.
 (= *Oïtrus* of p. 68.)
 †Phlorus, p. 66.
 *Pinguinus, p. 71.
 Plancus, p. 69.
 †Platamphus, p. 66.
 Platorincus, p. 67.
 Pleptera, p. 72.
 †Pogophthalmus, p. 66.
 *Priamphus, p. 72.
 Protalmus, p. 64.

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| Psitampus, p. 68. | *Sittella, p. 68. |
| Psoridus, p. 68. | Sizeris, p. 68. |
| †Pteropogon, p. 69. | Solmorincus, p. 72. |
| †Puffinus, p. 72. | Sovimanga, p. 68. |
| Pyrrhula, p. 68. | †Spheniscus, p. 71. |
| Quaxotus, p. 65. | Strepera, p. 67. |
| *Quiscalis, p. 68. | *Sularius, p. 72. |
| †Ramphalax, p. 66. | Talapius, p. 68. |
| Ramphanodus, p. 66. | †Tamatia, p. 65. |
| †Ramphimatus, p. 65. | Tanasus, p. 69. |
| †Ramphisma, p. 65. | *Turnix, p. 69. |
| Rincopogon, p. 67. | *Tuyus, p. 70. |
| Rincoptyx, p. 65. | Tyrannus, p. 67. |
| Rincortus, p. 66. | *Umbretta, p. 71. |
| †Rulula, p. 69. | Vanellus, p. 71. |
| Sarcopogon, p. 72. | †Vibranius, p. 67. |
| Sideropis, p. 67. | Xanthornus, p. 68. |
| Siopornis, p. 67. | |

WINTER BIRDS OF NEW ONTARIO, AND OTHER NOTES ON NORTHERN BIRDS.

BY G. EIFRIG.

BROADLY speaking, New Ontario comprises all the vast territory between Lakes Superior and Huron and Hudson Bay; and between Manitoba in the west and the longitude of Lake Nipissing in the east. In a narrower and more common sense, however, New Ontario means the land along the new provincial railroad from North Bay, on the northeast shore of Lake Nipissing, to Matheson, near Lake Abitibi in the north. This road is to be extended to the projected Transcontinental Grand Trunk Pacific Railway, and afterwards even to James Bay. Along this railway the rich veins of silver have been discovered, which have drawn

so many into these northern wilds and have made towns spring up like mushrooms, the most noted of which is Cobalt, from which the whole region sometimes receives the same name. Into this district I had occasion to go in the middle of last March and to stay about two weeks in the various places along the railroad. And as bird lists from this locality are few and far between, especially of winter birds, the few notes I made may not be amiss. Nor is the list a very extended one, but the very paucity of birds tells its own peculiar story.

As I left Ottawa the first large flocks of Crows were piling in on the fields from the south. Only fields having a decided southern slope showed places free from snow. In most places it was still rather deep, so the Crows were not entering a land of plenty. At North Bay I saw only four newly arrived Crows.

It may seem strange to call birds seen in the end of March winter birds. But such they were. For the region north of North Bay was to all intents and purposes still in the middle of winter. Only the lengthening days and the intensity of the sun's rays made it certain that the end of winter could not be far off. Otherwise there was snow everywhere, none had melted so far; the rivers and lakes were still used as highways for the teams hauling supplies to the mines and lumber camps, as much as earlier in the winter.

The first winter bird I saw was a Raven (*Corvus corax principalis*) at Englehart, 138 miles north of North Bay. I was told that several had been seen at Larder Lake, about 15 miles northeast, all winter. The thermometer stood at 6° above zero in the afternoon, during the night it must have been 10°–25° below. The north wind was intensely cold. Right in the path of its icy blasts a bunch of jolly Chickadees (*Parus atricapillus*) were gambling in some pines, singing their soft, *Peabody*.

At Brentha P. O., 5 miles west of Heaslip station — most of these names are not yet on maps — I had a unique experience with a Canada Jay (*Perisoreus canadensis*). A Swiss settler told me, that near his little primitive cabin, that he had built for himself in the wilderness, was a 'meat bird,' which would come to him when called and eat out of his hand. I said, I would come next morning and take its picture. He said, it perhaps would not come when seeing a stranger there or not stay on his hand long enough.

I said, I would try. When I reached his cabin, he was not at home, but, according to his wish, I went in, took some breakfast food — rolled oats — in my hand, went out and called the name the owner of the cabin had divulged to me. Imagine my surprise when out of a spruce thicket in a hollow before the cabin a Canada Jay came and without much ado flew on my extended hand and ate to his heart's content, as though we had known each other for years. Then he took some in his bill and flew back to the thicket, where he undoubtedly fed his mate, incubating the eggs. Of course, the name had nothing to do with its coming, it came also without being called; the food was all it cared for. I set my kodak on a wood pile, near where I had stood and got some more eatables. The Jay came again, flew on my hand, eyed me a little and then fell to eating again. With my right hand I took its picture twice, while feeding on the left. They proved failures, however, since the bird was too close to the camera for a snap shot. Shortly after the owner came, who was not a little astonished at my story, and I then took some better pictures of the bird on his hand.

On the way back to Heaslip I saw about 15 Chickadees and one Hairy Woodpecker (*Dryobates villosus leucomelas*), *i. e.*, if that form is really the Ontario one, and not true *villosus*.

At Kingersdorf, 8 miles north of Englehart, whereto I walked in the teeth of a fiercely cold north wind, there were a few Snowflakes (*Plectrophenax nivalis*) about the cabin of the man after whom the new station had been named. A flock of about 25 of these, I saw on Lake Temiskaming at the town of Haileyburg.

The English Sparrow (*Passer domesticus*), while already established at Cobalt, had not yet penetrated far enough north to reach Englehart. It was rather a relief to be for once in a sparrowless town. But no doubt, they are there now.

At Latchford, south of Cobalt and Englehart, I saw a flock of Redpolls (*Acanthis linaria*), and in an open place in the Montreal River, at the rapids near the railway bridge three Golden-eyes (*Clangula americana*).

And finally, at New Liskeard, I again saw the vanguard of first spring migrants here, a flock of Crows, which I had left behind at North Bay, flying due north.

These are all the birds I saw in this northland. Could I have

gone into the woods, I might have encountered, if luck had favored me, the two Three-toed and the Pileated Woodpeckers, the Canada Ruffed and Spruce Grouse (*Bonasa umbellus togata* et *Canachites canadensis*), possibly also the Sharp-tailed Grouse (*Pediocetes phasianellus*), and the Hawk and Great Gray Owls. It must be admitted that the winter bird-life of New Ontario is not a very conspicuous one.

Great Horned Owl *versus* Porcupine.—In December, 1907, a *Bubo virginianus* was brought to me, which had been shot on the 19th at Inlet, Labelle Co., Quebec, 50 miles northeast of Ottawa. It proved to be a remarkable specimen from the fact that it bore palpable evidence of having had an encounter with a porcupine, shortly before it was shot. It was liberally sprinkled over with quills, especially on the sole of the right foot — the quills having penetrated even that horny skin — under the right wing, on the breast, neck, and even two in the left eye-lid. Some of the quills had pierced the thick, solid muscles of the breast, lying against the sternum. Fifty-six quills and parts of quills were extracted from the skin and flesh, and about ten left in. How did this owl come to tackle such an undesirable antagonist or prey? The probability is, that the owl was foraging for food, and, being very hungry — probably a not uncommon experience for them in these northern woods — swooped down on the first moving object that even remotely appeared like legitimate prey, and, in her eagerness and possibly by reason of darkness in the woods, did not find out her mistake until she had reached forward with one claw and gotten that full of spines, simultaneously receiving also a slap from the tail of the porcupine, that lodged the rest of the little barbed spears in her anatomy.

Most of the hawks and owls received here in winter have empty stomachs, showing that hunger must be a frequent, if disagreeable experience with them. At such times the gall seems to discharge more copiously into the stomach, as it and the intestines are in such cases very green. Probably a way nature adopts to somewhat relieve the pain of hunger.

There is an old established breeding colony of Black-crowned Night Herons (*Nycticorax nycticorax naevius*) on Kettle Island near

Ottawa. However, birds in the adult plumage are almost never seen, but any number of young in August and September. Mr. E. White broke this monotony by securing two adult males, Sept. 10, 1907, in a little swampy woods, near the city limits.

The appearances of Brünnich's Murre (*Uria lomvia*) south of their breeding range, are for most localities, when they are seen at all, put down as being of infrequent or at least very irregular occurrence. Here at Ottawa, however, it may be called a regular event. For quite a number of years past, they have come every November, usually in the second half of the month, *e. g.*, in 1907 the first came Nov. 25 and the last Dec. 8. They usually appear during high easterly winds, coming from the direction of the wind and succumb in numbers to the guns of the habitués of the river, mostly French-Canadians. It is difficult to secure specimens, however, for many are quickly bought up by people desiring to have them mounted as ornaments for their parlors, and the rest are plucked and *eaten* by the successful hunters.

Adult males of all three Scoters, *Oidemia americana*, *deglandi* and *perspicillata*, have this fall (1908), in September and October, been taken near Ottawa, which is a very unusual occurrence, especially as regards the first named. One of these was secured by Mr. G. White for his collection, and one of the last was seen by the writer in the hands of a taxidermist, Oct. 28.

A still greater rarity was secured Nov. 2 by Mr. Bedard, the rifle-range keeper, who on that date took four young King Eiders (*Somateria spectabilis*). They were in the company of two adult males, which were wary enough to escape. One of them is now in my collection, two in that of the Fisheries Museum, and the fourth in the collection of Mr. E. White. This is the first record for this species from this neighborhood.

SOME NOTES ON THE BIRDS OF OKANAGAN,
BRITISH COLUMBIA.

BY ALLAN BROOKS.

THE following notes comprise the more important results of the last few years' field work in the Okanagan district. While the greater portion of the Okanagan Valley lies in the Transition Zone, the thirty miles running north from the International boundary evidently belong to the Upper Sonoran, as characterized by the luxuriant growth of greasewood, and the presence of such Sonoran forms as horned toads (*Phrynosoma*), and jack rabbits (*Lepus texianus*). It is in this southern portion of the district, in the neighborhood of Osoyoos Lake, that the additions to the Canadian fauna can be expected to occur. Mr. C. deB. Green who resides at this point has recently devoted much of his time to ornithology, and I am indebted to him for some most interesting records.

Undoubtedly many more Great Basin forms will occur; some of them, such as Cañon Wren and Sage Sparrow, have already been fairly well identified by Mr. Green, but they are not included in this list, as specimens have not been taken.

The lower portion of the Similkameen Valley also lies in the Upper Sonoran zone, the rainfall here reaching the minimum for Canada, averaging only three inches yearly.

Recurvirostra americana. AMERICAN AVOCET.—During twenty years collecting in British Columbia I have kept a special lookout for this bird, but not until April 28 of the present year have I ever come across it. On that date a flock of fifteen arrived at the north end of Okanagan Lake and I secured six of them—five adult females with ovaries enlarged, and one young male, which would not have bred this year. This would indicate that the species does not pair until its arrival at its breeding grounds. This is the first record for the Province.

Nycticorax nycticorax naevius. BLACK-CROWNED NIGHT HERON.—On the evening of August 3 of the present year I saw a bird that could have been nothing but a Night Heron, at Okanagan landing. It had a rather quick bittern-like flight and continuously uttered a hoarse quack, quite different from the note of a bittern. It circled twice around my canoe in response to an imitation of its cry and then continued its journey southward, quacking at regular intervals.

Totanus solitarius. SOLITARY SANDPIPER.

Totanus s. cinnamomeus. WESTERN SOLITARY SANDPIPER.—Both forms of the Solitary Sandpiper occur in the Okanagan district in about equal numbers, as is proved by a series collected by myself in the past four years. Neither breed, though young with down still adhering have been taken.

Falco mexicanus. PRAIRIE FALCON.—The Prairie Falcon occurs throughout southern British Columbia but the only locality I have found it breeding is in the southern portion of the Okanagan district. A pair had a nest in a cliff near the residence of Mr. C. deB. Green at Osoyoos Lake; near by was the eerie of another falcon—a Peregrine—the male of which incessantly badgered the female Prairie Falcon, with a series of splendid stoops.

Falco peregrinus pealei. PEALE'S FALCON.—In the semi-arid interior one would naturally expect to find the pale form of the Peregrine, but while the adults are not particularly dark, the young are fully as dark as the darkest specimens I have seen on the coast.

In the young the whole mantle is sooty black, the feathers edged with cinnamon—not whitish or buffy as in typical *anatum*. The lower surface is heavily streaked. Still it is well known among falconers how the young of these falcons vary, even in the same localities, so I place these only provisionally under *pealei*.

Falco columbarius. PIGEON HAWK.—The breeding Merlin is nearly pale enough for *richardsoni* but the number of tail bars agrees with *columbarius*.

Young birds that I take to be *richardsonii* occur on migrations, but I have only once taken *suckleyi* east of the Cascades, a young female taken in August, 1907, at Okanagan Landing.

In the very large number of Merlins that I have collected or examined in British Columbia, representing all three subspecies, only one *suckleyi* showed any approach to *columbarius*, while a number of puzzling intergrades between *columbarius* and *richardsonii* have been noted.

Otus asio kennicottii. KENNICOTT'S SCREECH OWL.—The Screech Owls of the Okanagan and Osoyoos districts, while averaging rather paler than coast specimens, are nearer the above form than the Rocky Mountain subspecies, *maxwelliae*.

Otus flammeola idahoensis. DWARF SCREECH OWL.—In November, 1902, I picked up a dilapidated specimen of this little owl on the beach at Penticton at the south end of Okanagan Lake. This is the only Canadian record.

Sphyrapicus thyroideus. WILLIAMSON'S SAPSUCKER.—When surveying in the hills near Fairview in the Osoyoos district Mr. C. deB. Green had a male of this sapsucker within close range for some time. With his transit telescope he was enabled to note every feather, and described the markings so minutely that there can be no doubt of the species.

There is also an old record for Similkameen made I think by R. V. Griffin.

Aëronauts melanoleucos. WHITE-THROATED SWIFT.— This is another species, new to Canada, that I have so far been unable to secure specimens of. Three or four pairs bred in the summer of 1907 in the high cliffs at the outlet of Vaseux Lake; they were daily seen by Mr. Green and two other close observers and there can be no doubt as to their identity.

Otocoris alpestris arcticola. PALLID HORNED LARK.— Mr. Green this year took the eggs of the Pallid Horned Lark on the high mountains above timber line, between the Okanagan and Similkameen valleys and collected the female, which is now in my collection.

This is the breeding form on all the high mountains of the Province, *Otocoris a. merrilli* being restricted to the arid lower levels; nowhere do their breeding ranges impinge on each other.

Nucifraga columbiana. CLARKE'S NUTCRACKER.— Clarke's Nutcracker is a fairly common though irregular breeder at low elevations throughout the Okanagan district. I took two nests March 23 and 30, 1906, both in ponderosa pine trees, and Mr. Green has taken three more this year at Osoyoos. Two broods are reared, as I have seen nestlings being fed in June.

Dolichonyx oryzivorus. BOBOLINK.— A regular summer visitant and increasing. Breeds as far north as Lumby; common at Penticton.

Coturniculus savannarum bimaculatus. WESTERN GRASSHOPPER SPARROW.— Scarce breeder from Vernon south.

Chondestes grammacus strigatus. WESTERN LARK SPARROW.— Common breeder at Osoyoos, scarce at Vernon.

Zonotrichia leucophrys gambeli. INTERMEDIATE SPARROW.— The Intermediate White-crowned Sparrow breeds from 1200 feet (Okanagan Landing) up to timber line (Osoyoos district).

Spizella breweri. BREWER'S SPARROW.— This year Mr. Green found Brewer's Sparrow a fairly common resident in sage brush areas at Osoyoos. Previous to this the only records I am aware of were Mr. Rhoads's at Ashcroft, and one taken by myself on migration at Vernon. My record for 158-mile House, Cariboo district, proved a mistake of identity, the two males taken being *Spizella pallida*—also new to the British Columbian list.

Junco hyemalis montanus?— The Juncos of the Okanagan district are very puzzling. Dr. Dwight tells me that two I have sent him are very close to *montanus*, others are typical *shufeldti*, while during migrations a bewildering range of variation can be seen.

Roughly speaking, the wintering birds and those that breed at high altitudes are typical *shufeldti*, those breeding in the Pine belt approach *montanus*, while the migrating hordes show a very large admixture of *hyemalis*, typical examples of which I have taken as far west as the west slope of the Cascades at Chilliwack.

Lanius ludovicianus gambeli. CALIFORNIA SHRIKE.— Mr. Green sent me a very dark example of the California Shrike taken at Osoyoos in March of the present year — the second record for British Columbia.

Icteria virens longicauda. LONG-TAILED CHAT.—A common breeder at Osoyoos; rare at Vernon.

Oroscoptes montanus. SAGE THRASHER.—This is another species the addition of which to the Canadian list is due to the energy of Mr. Green. He reports it as a scarce local breeder in the sage brush country of Osoyoos district, and has sent me a handsome set of four eggs with the male bird collected 21st June of this year.

THE DESTRUCTION OF BIRDS AT NIAGARA FALLS.

BY LEON J. COLE.

IN HIS interesting account, in the July 'Auk,' of the destruction of a large number of Whistling Swans at Niagara Falls, on May 15, 1908, Fleming¹ mentions that birds have been killed by going over the Falls in times past. In this same connection the following extracts from what is said to be the first description of Niagara Falls published in the English language may be of interest to ornithologists. The extracts are from "A Letter from Mr. Kalm, a Gentleman of Sweden, now on his Travels in America, to his Friend in Philadelphia; containing a particular Account of the Great Fall of Niagara," written at Albany, September 2, 1750. This account first came to my notice in the recent excellent monograph on 'The Falls of Niagara,' by Professor Spencer,² in which it is republished as an appendix; but in quoting I have taken directly from a reprint of the original account of John Bartram³

¹ Fleming, James H. The destruction of Whistling Swans (*Olor columbianus*) at Niagara Falls. Auk, Vol. XXV, pp. 306-309, 1908.

² Spencer, Joseph William Winthrop. The Falls of Niagara; their evolution and varying relations to the Great Lakes; characteristics of the power, and the effects of its diversion. Canada Dept. of Mines, Geol. Surv. Branch, 1905-6, xxxii + 490 pp., pls. and maps. 1907.

³ Observations | on the | Inhabitants, Climate, Soil, Rivers, Productions, | Animals, and other matters worthy of Notice. | Made by | Mr. John Bartram, | in his Travels from | Pensilvania | to | Onondago, Oswego and the Lake Ontario, | In Canada. | To which is annex'd, a curious Account of the | Cataracts at Niagara. | By Mr. Peter Kalm, | A Swedish Gentleman who travelled there. | London: | Printed for J. Whiston and B. White, in | Fleet-Street, 1751. [Reprinted by W. F. Humphrey, Geneva, N. Y., 1895.] viii + 94 pp.

of his "Travels from Pensilvania to Onondago, Oswego and the Lake Ontario," in which Kalm's letter was first published. Kalm gives a really excellent description of the Falls, and one which is very temperate throughout, a characteristic none too common in the accounts of the early travellers. Kalm, in fact, apparently prides himself on this attitude, for he says in his letter, after stating that he has obtained all the information he could by questioning the French at Fort Niagara: "But as I have found by experience in my other travels, and that very few observe nature's works with accuracy, or report the truth precisely, I cannot now be entirely satisfied without seeing with my own eyes whenever 'tis in my power." He says of Father Hennepin, who had previously given the height of the Falls as 600 feet; "but he has gained little credit in *Canada*; the name of honour they give him there, is *un grand menteur*, or *The great Liar*; he writes of what he saw in places where he never was. For my part, who am not fond of the *Marvellous*, I like to see things just as they are, and so to relate them." He himself gives 137 feet as the height (on the authority of "the king's engineer in *Canada*"), which is considerably *under* the present measurements.

Of the loss of bird life at the Falls he says: "Several of the *French* gentlemen told me, that when birds come flying into this fog or smook of the fall [the mist from the cataract], they fall down and perish in the Water; either because their wings are become wet, or that the noise of the fall astonishes them, and they know not where to go in the Dark: but others were of opinion, that seldom or never any bird perishes there in that manner; because, as they all agreed, among the abundance of birds found dead below the fall, there are no other sorts than such as live and swim frequently in the water; as swans, geese, ducks, water-hens, teal, and the like. And very often great flocks of them are seen going to destruction in this manner: they swim in the river above the fall, and so are carried down lower and lower by the water, and as water-fowl commonly take great delight in being carry'd with the stream, so here they indulge themselves in enjoying this pleasure so long, till the swiftness of the water becomes so great, that 'tis no longer possible for them to rise, but they are driven down the precipice, and perish. They are observ'd when they draw nigh the fall, to

endeavour with all their might to take wing and leave the water, but they cannot. In the months of *September* and *October* such abundant quantities of dead waterfowl are found every morning below the Fall, on the shore, that the garrison of the fort for a long time live chiefly upon them; besides the fowl, they find also several sorts of dead fish, also deer, bears, and other animals which have tried to cross the water above the fall; the larger animals are generally found broken to pieces."

Further on he adds: "I was told at *Ofwego*, that in *October*, or thereabouts, such plenty of feathers are to be found here below the Fall, that a man in a days time can gather enough of them for several beds, which feathers they said came off the birds kill'd at the Fall. I ask'd the *French*, if this was true? They told me they had never seen any such thing; but that if the feathers were pick'd off the dead birds, there might be such a quantity."

Kalm remarks that "It was formerly thought impossible for any body living to come at the Island that is in the middle of the fall" (Goat Island), but relates that, some 12 years or so previous to his visit, two Indians in a canoe drifted down the river by accident, and managed to land on the island. After ineffectual efforts to get off, in the course of which they made "a ladder or shrouds of the bark of lindentree (which is very tough and strong)" and descended to the foot of the Fall, only to be dashed back when they attempted to swim ashore, they were finally rescued, when they had been there nine days and were almost starved, by other Indians, who waded across to the island with the help of poles pointed with iron. Kalm adds, in his letter to his friend: "Now since the way to this island has been found, the *Indians* go there often to kill deer, which having tried to cross the river above the fall, were driven upon the island by the stream: but if the King of *France* would give me all *Canada*, I would not venture to go to this island; and were you to see it, Sir, I am sure you would have the same sentiment."

LIST OF BIRDS OBSERVED ON THE UPPER TOKLAT
RIVER NEAR MT. MCKINLEY, ALASKA, 1907-1908.

BY CHARLES SHELDON.

THE birds noted in this list were observed incidentally while hunting and studying the habits of some of the larger animals at the head of the Middle Fork of Toklat River, Alaska, practically at the north base of Mount McKinley in the main Alaskan range, latitude about $63^{\circ} 30'$. The river has its sources in the glaciers of the main range and flows through four high ranges before it emerges outside, where the main body of the timber ends. From its entrance into the outside range, however, there is a fringe of spruces on both sides from two to three hundred yards wide extending up the mountain slopes and thus continuing to within a few miles of the source. I built my cabin in the extreme upper end of this tongue of timber, 10 miles above the point where the river emerges from the outside range. The birds mentioned in this list were observed at and above that point, mostly above all timber. The variety of bird life in the region is not great. I arrived about the first of August, 1907, and left June 11, 1908. Careful attention was given to recording the spring arrivals, but the fall departures, in most cases, were not observed. By the latter part of September, 1907, all birds but the residents had gone, except in the few cases mentioned. The dates given show when the bird was first seen in the spring of 1908 or last seen in the fall of 1907. Thirty miles below, in the vast timbered area, bird life may be more varied and abundant.

The river is a silt-laden stream, dashing swiftly and often in several channels through a broad glacial valley with wide bars extending from a quarter to a half mile on each side. In some places willows grow abundantly; in others there is grass, but most of the country is bare. The mountains are high and rugged, with much snow on the north slopes the year round; they are usually bordered by narrow rolling hills, all above timber, and contain numerous small lakes of a few acres only. The trees are spruces and willows; willows often extend well up on the slopes and up the

creeks. The poplar is practically absent. Dwarf birch grows abundantly in places.

The specimens of birds collected were presented to the U. S. Biological Survey.

BIRDS OF TOKLAT RIVER REGION.

Larus argentatus. HERRING GULL.—Commonly breeding June 12, 40 miles below my cabin.

Larus brachyrhynchus. SHORT-BILLED GULL.—Seen commonly in pairs along the bars in spring. Probably breeds. First seen May 16.

Sterna paradisæa. ARCTIC TERN.—Common summer resident about the small lakes in the rolling country above timberline. Breeds. First seen May 30. Mature young observed August 2.

Anas platyrhynchus. MALLARD.—Summer resident below the mountain ranges. One migrating pair observed May 16. About 40 miles above the mouth of the river there is a stretch of 3 miles where the water does not freeze but remains open all winter. This is the end of the salmon run. About 300 mallards were there all winter. They fed on dead salmon and salmon eggs in the pools. White men have observed these ducks wintering there for seven years. Indians tell me they have always wintered there. I visited the spot on January 3, 1908, and secured two males and a female.

Sixteen mallards wintered on Moose Creek in the open water about 100 miles southwest of those in the Toklat. These also were in open water at the head of the salmon run.

Mallards winter also just below Gulkana Lake in the outlet which flows into Copper River, and a few have been observed wintering in a small tributary of the Tanana River just below the Delta River. Undoubtedly there are many other places in the interior of Alaska where Mallards winter.

Nettion carolinense. GREEN-WINGED TEAL.—Commonly seen with young in the small lakes in the rolling country above timber. So observed in July and August.

Histrionicus histrionicus. HARLEQUIN DUCK.—One pair observed May 16.

Chen hyperborea. LESSER SNOW GOOSE.—Flock of three seen migrating October 10.

Grus canadensis. LITTLE BROWN CRANE.—Seen only in fall migration, from Sept. 10 to early October. All flocks followed the same course.

Gallinago delicata. WILSON SNIPE.—Common summer resident. Arrived May 14.

Pisobia bairdi. BAIRD SANDPIPER.—One migrating pair observed May 12.

Heteractitis incana. WANDERING TATTLER.—Very abundant in spring. Arrived May 18. A female was secured May 22. They appeared mated

in pairs and their actions showed they were preparing to breed. They were still about in abundance when I left, June 11, but probably had not begun to breed. They occurred along the river bars and at the lakes and even on the small creeks high on the mountains. Not observed in the lower country.

Bartramia longicauda. UPLAND PLOVER.—Common summer resident; breeds. Arrived May 28.

Actitis macularia. SPOTTED SANDPIPER.—Common summer resident. First observed a few miles below my cabin June 11, but undoubtedly arrived earlier. Breeds.

Numenius hudsonicus. HUDSONIAN CURLEW.—Summer resident in rolling country above timber. Arrived May 16.

Squatarola squatarola. BLACK-BELLIED PLOVER.—Observed occasionally late in July about the lakes.

Ægialitis semipalmata. SEMIPALMATED PLOVER.—Common on bars in spring migration. Arrived May 17 and still about June 11.

Canachites canadensis osgoodi. ALASKA SPRUCE GROUSE.—Resident. From time to time through the winter one would appear in the woods near my cabin. Two fine males were secured in October, 1907. Abundant below, in the timbered region.

Lagopus lagopus. WILLOW PTARMIGAN.—Very abundant resident. Began to pair for breeding April 20.

Lagopus rupestris. ROCK PTARMIGAN.—A male was killed March 5 in the rolling country above timber.

Lagopus leucurus peninsularis. ALASKA WHITE-TAILED PTARMIGAN.—Not uncommon high on some of the mountains.

Circus hudsonius. MARSH HAWK.—Common summer resident. Arrived May 12. Breeds.

Aquila chrysaetos. GOLDEN EAGLE.—Common summer resident. Breeds, nesting in cliffs. Arrived April 8. Last observed September 21. Arrived paired and went directly to old nest and remained about it. One nest contained two eggs when I examined it April 29. When next I examined it, June 7, it contained two fledglings.

Gyrffalcon.—A large grayish hawk was observed at times through the winter, always on and about the creeks of the mountains.

Falco columbarius. PIGEON HAWK.—Common summer resident. Breeds. Arrived May 27. Large hawks were occasionally seen in summer, but the species were not recognized.

Asio flammeus. SHORT-EARED OWL.—Exceedingly abundant everywhere above timber in spring. Arrived April 30 in pairs. Breeds.

Glaux funerea richardsoni. RICHARDSON OWL.—A male killed May 4, 1908.

Bubo virginianus subsp.? HORNED OWL.—Common resident in the woods.

Nyctea nyctea. SNOWY OWL.—Very common above timber from November to early May.

Surnia ulula caparoch. AMERICAN HAWK OWL.—Common summer resident. Arrived April 10.

Ceryle alcyon. BELTED KINGFISHER.—Summer resident. Breeds. Arrived May 29.

Dryobates pubescens nelsoni. ALASKA DOWNY WOODPECKER.—Resident. Not uncommon; always seen feeding in willows and sometimes as high as willows grow in the mountains. A male secured in December, 1907.

Picoides americanus fasciatus. ALASKA THREE-TOED WOODPECKER.—Resident in spruce woods. Common. A male secured October, 1907.

Sayornis saya. SAY PHOEBE.—Common. Arrived June 5.

Pica pica hudsonia. BLACK-BILLED MAGPIE.—One seen Sept. 22 in some high cliffs.

Perisoreus canadensis fumifrons. ALASKA JAY.—Resident. Very abundant.

Corvus corax principalis. NORTHERN RAVEN.—Resident. Abundant.

Euphagus carolinus. RUSTY GRACKLE.—Summer resident. Common. Arrived May 10, when a male was secured.

Pinicola enucleator alascensis. ALASKA PINE GROSBEEK.—Common in migrations but not observed at timberline between migrations. Few seen in spring, abundant in fall. First bird to arrive in spring; paired by March 12; migrated in flocks through October; last seen November 7. A male and a female were preserved in October, 1907, and a male March 11, 1908.

Leucosticte sp.?—Common in spring migration. Arrived May 3. Seen usually high above timberline in pairs.

Acanthis linaria. REDPOLL.—Resident. All through October numerous flocks appeared at timberline, but very few remained at timberline in winter. Common below the mountain ranges in winter. Again at timberline numerous flocks appeared in spring, beginning about April 15, and continued through May. Many remained near timberline to breed. In winter it feeds exclusively among willows. Males were secured in November, 1907, and May 24, 1908.

Plectrophenax nivalis. SNOWFLAKE.—Common spring migrant. Arrived April 8, when a specimen was secured.

Calcarius lapponicus alascensis. ALASKA LONGSPUR.—Abundant in spring migration. Arrived May 12, when a male was secured.

Zonotrichia leucophrys gambeli. INTERMEDIATE SPARROW.—Abundant summer resident. Arrived May 3, when a male was secured. Nest with one egg observed on a bar, in a small grass tuft. Next day, outside the ranges, 30 miles below, I found another nest on the bar with 3 young ones and one egg.

Zonotrichia coronata. GOLDEN-CROWNED SPARROW.—Commonly seen in spring. Arrived May 26.

Spizella monticola ochracea. WESTERN TREE SPARROW.—Summer resident. Breeds. Commonest of sparrows at timberline. Arrived April 26. Last sparrow to leave in fall, late in September.

Junco hyemalis. SLATE-COLORED JUNCO.—Common summer resident. Breeds. A male was secured April 30, 1908.

Passerella iliaca. FOX SPARROW.—Common summer resident. Arrived May 4.

Petrochelidon lunifrons. CLIFF SWALLOW.—Seen breeding in cliffs 25 miles below my cabin on June 11.

Riparia riparia. BANK SWALLOW.—Abundant summer resident. Breeds. Arrived May 18.

Lanius borealis. NORTHERN SHRIKE.—Common summer resident. Breeds. Arrived April 26.

Dendroica coronata. YELLOW-RUMPED WARBLER.—Common summer resident. Most abundant of warblers. Arrived May 9.

Dendroica striata. BLACK-POLL WARBLER.—Flock observed migrating, June 3.

Wilsonia pusilla pileolata. PILEOLATED WARBLER.—Common summer resident. Arrived May 20.

Anthus rubescens. PIPIT; TITLARK.—Very common summer resident. Breeds. Keeps mostly above timberline. A male secured May 12, 1908.

Cinclus mexicanus unicolor. WATER OUZEL.—Common resident. Abundant in winter on the open water where Mallards winter on the Toklat, mostly below the mountain ranges, and keeps constantly singing for two hours after dawn. Specimen secured.

Certhia familiaris montana. ROCKY MOUNTAIN CREEPER.—Male killed near cabin in woods October 21.

Penthestes hudsonicus. HUDSONIAN CHICKADEE.—Common resident.

Regulus calendula. RUBY-CROWNED KINGLET.—Common summer resident. Arrived April 29.

Hylocichla ustulata swainsoni. OLIVE-BACKED THRUSH.—Common summer resident. Arrived May 12. Keeps singing all night when breeding. A male secured May 27, 1908.

Hylocichla guttata. DWARF HERMIT THRUSH.—Summer resident; fairly common. Breeds. Arrived May 26, when a female was secured.

Planesticus migratorius. ROBIN.—Very abundant summer resident. Almost as common high in the mountains, at upper limit of willows, as it is below. Breeds usually in small spruces, occasionally in willows and on the ground. Arrived May 3. Last seen October 4.

Ixoreus naevius meruloides. PALE VARIED THRUSH.—Common summer resident. Breeds. Arrived May 15. Last seen October 7.

TWENTY-SIXTH STATED MEETING OF THE AMERICAN ORNITHOLOGISTS' UNION.

THE Twenty-sixth Stated Meeting, of the American Ornithologists' Union convened in Cambridge, Mass., Monday evening, November 16, 1908. The business meeting was held in Mr. William Brewster's museum, and the public sessions, commencing Tuesday, November 17, and lasting three days, were held in the Geological and Zoölogical Lecture-rooms of the University Museum.

BUSINESS SESSIONS.—The meeting was called to order by the President, Mr. Charles F. Batchelder. Sixteen Fellows were present. The Secretary's report gave the membership of the Union at the opening of the present Stated Meeting as 888, constituted as follows: Fellows, 48; Honorary Fellows, 13; Corresponding Fellows, 62; Members, 75; Associates, 690.

During the year the Union lost seventy-nine members, nine by death, forty-one by resignation, and twenty-nine for non-payment of dues. The deceased members included one Fellow, one Honorary Fellow, and seven Associates, as follows: Hon. Charles Aldrich, a Fellow, and one of the Founders of the Union, who died in Boone, Iowa, at the age of 80 years; Prof. J. V. Barboza du Bocage,¹ an Honorary Fellow, who died at the age of 84 years; and the following Associates: Prof. Leslie A. Lee,² who died at Portland, Maine, May 20, 1908, in the 56th year of his age; Prof. Francis H. Snow,³ who died in Bellfield, Wisconsin, Sept. 20, 1908, at the age of 68 years; Mrs. Ethel Richardson Chadbourne, who died at Sharon, N. H., Oct. 4, 1908; Cyrus Carleton, who died Nov. 15, 1907; Charles A. Fuller, who died March 16, 1906; Mrs. Thos. O. Conant, and Dr. Millet T. Thompson.

The report of the Treasurer showed the finances of the Union to be in a satisfactory condition.

Edward W. Nelson was elected President; Frank M. Chapman and A. K. Fisher, Vice-Presidents; John H. Sage, Secretary;

¹ For an obituary notice, see *Auk*, XXV, pp. 496-497.

² For an obituary notice, see *Auk*, XXV, pp. 340-341.

³ For an obituary notice, see *Auk*, XXV, p. 497.

Jonathan Dwight, Jr., Treasurer; Ruthven Deane, William Dutcher, F. A. Lucas, Chas. W. Richmond, Thos. S. Roberts, Witmer Stone, and Henry W. Henshaw, members of the Council.

F. DuCane Godman, of London, England, was elected an Honorary, Fellow; Otto Herman, of Budapest, Hungary, was elected a Corresponding Fellow, and the following ninety-three persons were elected Associates, namely:

Dr. Z. B. Adams, Boston, Mass.; Charles H. Ames, West Newton, Mass.; Edward Avis, Worcester, Mass.; Claude T. Barnes, Salt Lake City, Utah; Oscar E. Baynard, Micanopy, Florida; Norman deWitt Betts, St. Louis, Mo.; Clarence Birdseye, New York City; Trustin B. Boyd, St. Louis, Mo.; Mrs. Ernest E. Brewer, Portland, Maine; C. E. Brown, Beverly, Mass.; William J. Brown, Westmount, Canada; Arthur L. Browne, West Roxbury, Mass.; Frank Bruen, Bristol, Conn.; Henry P. Burt, New Bedford, Mass.; Henry R. Carey, Cambridge, Mass.; Robert C. Caskey, Morristown, N. J.; Mrs. Fannie M. Chapman, Englewood, N. J.; Fred L. Charles, DeKalb, Ills.; John S. Codman, West Roxbury, Mass.; Leon J. Cole, New Haven, Conn.; Francis A. Corey, Keene, N. H., Mrs. Annie F. Cutler, Chelsea, Mass.; Wm. M. Derby, Jr., Chicago, Ills.; Mary C. Dickerson, New York City; Gaines R. Donoho, East Hampton, L. I.; J. Sumner Draper, Readville, Mass.; L. P. Emerson, Cambridge, Mass.; G. Clyde Fisher, De Funiak Springs, Florida; Richard E. Follett, Boston, Mass.; Mrs. Teresa I. French, Canton, Mass.; Edward F. Gaines, Ritzville, Wash.; Frank C. Gates, Chicago, Ills.; Frank H. Genung, West Haven, Conn.; Ludlaw Griscom, New York City; J. H. Hackenberg, Frankfort, Pa.; Samuel A. Harper, Maywood, Ills.; Chas. G. Hart, East Berlin, Conn.; C. E. Heil, Needham, Mass.; Arthur O. Heinrich, Baldwin, L. I.; Mrs. Nancy W. C. Holt, Cambridge, Mass.; Miss Louise Howe, Brookline, Mass.; Lucius Hubbard, South Bend, Ind.; Roy M. Ives, Clare, Iowa; Chas. D. Kellogg, Philadelphia, Pa.; Clarence M. Keyes, Pullman, Wash.; Anthony R. Kuser, Bernardsville, N. J.; Miss Bertha Langmaid, Boston, Mass.; W. Charlesworth Levey, Brookline, Mass.; C. B. Linton, Long Beach, Calif.; Sam. A. Lurvey, Southwest Harbor, Maine; Mrs. Ida W. McIntire, Cambridge, Mass.; William C. Mackie, Brookline, Mass.; F. Schuyler Mathews, Cambridge, Mass.; Chas. Merriam, Weston, Mass.; Willard L. Metcalf, New York City; Emory E. Nelson, Winnipeg, Canada; Daniel S. Newhall, Strafford, Pa.; Lucius H. Paul, Newark, N. Y.; Willard A. Paul, Dorchester, Mass.; Albert S. Peters, Lake Wilson, Minn.; J. Trevett Pike, Lynn, Mass.; Mrs. Francis Piper, Arlington Heights, Mass.; Alexander Pope, Hingham, Mass.; Arthur E. Price, Grant Park, Ills.; Henry C. Raven, Bay Shore, L. I.; Chas. H. Remington, East Providence, R. I.; Philip E. Robinson, Boston, Mass.; Wm. P. Shannon, New York City; Wm. T. Shaw, Pullman, Wash.; J. F. Stevens, Lincoln, Nebr.; Nathan F. Stone, Shrewsbury, Mass.; Thos. C. Taylor, Hubbard Woods, Ills.; Louis

A. Test, Los Angeles, Cal.; Miss Harriet W. Thompson, Port Sanilac, Mich.; Samuel Thorne, New York City; Mrs. Kate D. Tower, Boston, Mass.; A. H. Tuttle, Cambridge, Mass.; Miss Lucy W. Valentine, Cambridge, Mass.; Arthur W. Van Pelt, New Orleans, La.; Adrian Van Rossem, Pasadena, Cal.; Isaac H. Vrooman, Jr., Albany, N. Y.; Miss Ella S. Wales, Dorchester, Mass.; Frank H. Ward, Albany, N. Y.; Goodwin Warner, Cambridge, Mass.; Thos. C. Wayland, Simsbury, Conn.; Gordon B. Wellman, Malden, Mass.; Alexander Wetmore, Lawrence, Ks.; Ely L. Whitehead, Evanston, Ills.; Miss Alice W. Wilcox, Providence, R. I.; Harry C. Williams, St. Louis, Mo.; Henry A. Wing, Maywood, Ills.; Mrs. Elizabeth J. Worcester, Waltham, Mass.; John T. Zimmer, Lincoln, Nebr.

Drs. Allen, Dwight, Merriam and Richmond, and Messrs. Brewster, Ridgway and Stone were reappointed 'Committee on Classification and Nomenclature of North American Birds.'

Drs. A. K. Fisher, E. A. Mearns and Thos. S. Roberts, and Messrs. Chapman and Deane were appointed 'Committee on Bird Protection.'

PUBLIC SESSIONS. *First Day.*—The meeting was called to order by the President, Mr. Nelson.

The papers read during the morning session were as follows:

'Bird Studies in Northern Ontario,' by W. E. Clyde Todd. Remarks followed by Drs. Townsend and Merriam.

'Canadian Bird Havens,' by Ernest T. Seton. In the absence of the author Mr. F. M. Chapman explained Mr. Seton's ideas on the subject.

'Scarcity of the Ruffed Grouse in 1907,' by E. Seymour Woodruff. Remarks followed by Mr. Forbush, the author, Drs. Tuttle and Fisher, and Messrs. Francis and Brewster.

'A way to lighten the burden of Nomenclature,' by Dr. Jonathan Dwight, Jr. Remarks followed by Drs. Allen and Merriam, Messrs. Stone, Chapman and Brewster, and the author.

The papers of the afternoon were:

'Vernacular names of birds,' by Dr. Jonathan Dwight, Jr. Remarks followed by Messrs. Rhoads, Bent, Todd, Batchelder, the author, and Drs. Merriam and Allen.

'The part played by Birds in the recent Field Mouse Plague in Nevada,' by Dr. C. Hart Merriam.

'A Hollow Tree,' by Ernest Thompson Seton, was read in the

absence of the author by Mr. Chapman. It was illustrated by lantern slides.

'Some Observations on the Gulls and Terns of Massachusetts,' by E. H. Forbush. Illustrated by lantern slides.

After adjournment, a reception to meet members of the Union was held from 4 to 6 o'clock, by Mr. and Mrs. Charles F. Batchelder at their home on Kirkland St.

In the evening the members of the Union and their friends met at dinner at the Oakley Country Club, Waverley.

Second Day.—The meeting was called to order by President Nelson.

The papers of the morning session were:

'The position of Birds Feet in Flight,' by Dr. Chas. W. Townsend. Remarks followed by Messrs. Francis, Chapman, and Finley.

'The First Bird Protective Society in Italy,' by Rev. W. R. Lord.

'The tagging of wild birds as a means of studying their movements,' by Dr. Leon J. Cole. Remarks followed by Drs. Hodge, Fisher, Bryan, Roberts, the author, and Messrs. Murdoch and Ells.

'Observations on the Black Mamo,' by Dr. W. A. Bryan. Remarks followed by Messrs. Brewster and Henshaw, and the author.

'Experiences of an Ornithologist in Costa Rica,' by M. A. Carriker, Jr.

The following papers were presented at the afternoon session:

'Ornithological Miscellany from Audubon Wardens,' by B. S. Bowdish.

'A study of a breeding colony of Yellow-headed Blackbirds, with an account of destruction of the progeny of the entire colony by some unknown agency,' by Dr. Thos. S. Roberts. It was illustrated by lantern slides.

'Propagation of Bob-white,' by Prof. C. F. Hodge.

The concluding papers were by Frank M. Chapman, both being illustrated by lantern slides and moving pictures: 'Methods of study of the Nesting Habits of Birds,' and 'Pelican Island in 1908, with other Florida Notes.'

In the evening Mrs. Charles F. Batchelder invited the ladies of the Union to her house, and Mr. William Brewster gave a reception for the gentlemen of the Union at his Museum.

Third Day.—The meeting was called to order by President Nelson.

The papers of the session, all illustrated by lantern slides, were: 'Triumphs of Bird Protection in Louisiana,' by Rev. Herbert K. Job.

'Through Eastern Oregon,' by William L. Finley.

Resolutions were adopted thanking the Museum authorities of Harvard University for the use of the Geological and Zoölogical Lecture-rooms; to the Nuttall Ornithological Club for the very cordial welcome and most generous hospitality extended to the visiting members and friends of the Union; to Mr. and Mrs. Charles F. Batchelder and Mr. William Brewster, for the kind attention shown the members and friends of the Union, and to Col. and Mrs. John E. Thayer for the polite invitation to the members of the Union to visit their home and museum at Lancaster, Mass.

On Friday, November 20, after adjournment of the Union, a "pilgrimage" was made to Lancaster, Mass., by some seventy members and friends of the Union. The party was most cordially received by Col. and Mrs. John E. Thayer, and an inspection made of their fine museum and valuable ornithological library.

The next meeting of the Union will be held in New York City, commencing December 6, 1909.

The registered attendance of members at this Stated Meeting was much larger than ever before, and the social features will long be remembered.

JNO. H. SAGE,
Secretary.

GENERAL NOTES.

A Curious Influx of Southern Herons to New Jersey.— In the October, number of 'The Auk' (XXV, p. 473) I recorded the capture of an American Egret at Sea Bright, N. J., by Mr. R. B. Romaine. He has since informed me that sometime between August 5 and 15 two more were seen, and that from August 6 to September 5, 1908, a large flock (nearly fifty birds) of immature Little Blue Herons (*Ardea carulea*) were inhabiting the tide flats. On September 5, the last day they were seen, he shot a male out of a flock of three, and wounded another. This specimen he had mounted, and is now in his home.

Mr. Romaine's family have lived at Sea Bright for nearly forty years, and never before have they seen any species of southern heron in the neighborhood. Could the excessively hot weather of the past July have caused their occurrence? —REGINALD HEBER HOWE, JR., Concord, Mass.

The Little White Egret in New Mexico.— A specimen of this beautiful heron (*Egretta (andilissima)*) was shot Oct. 21, 1908, while on a small pond at the home ranch of the G. O. S. Cattle Co., by one of the farm hands. Fortunately the writer arrived at the ranch the next day and was able to skin the bird at once; it proved to be a male in excellent plumage and flesh. It had been noticed for several hours before alighting on the pond, flying about the barn buildings in company with a flock of domestic pigeons. The bird is now in the possession of Mrs. Victor Culberson of the G. O. S. Ranch. This ranch has an altitude of 6300 feet, and is on the head waters of the Sapillo Creek (a tributary of the Gila River), the exact location of the ranch being Section 15, T 15 S, R 12 W.

The spot where this bird was taken is about sixty miles north of the place where the specimen reported in 'The Auk' two years ago by Maj. Munson, was secured. — W. H. BERGTOLD, Denver, Colo.

The Clapper Rail in Essex County, Mass.— On September 15, 1908, I picked up on the beach at Plum Island, Mass., near the mouth of the Ipswich River, a dead Clapper Rail. After fully satisfying myself as to the identity of the bird, I took it to the Abbott Frazar Co., taxidermists, in Boston, to be mounted. I have since been informed by them that no indications were found of the bird's having been shot; and, taking into consideration the fact that water ran freely from the bird's mouth when picked up by the legs, I imagine that it probably died in the water. The body did not appear to be decomposed to any extent, and the taxidermist's foreman informed me that the bird had probably not been dead over three days. Taking into consideration the direction of winds, etc., during that period, it seems very unlikely that the rail could have drifted from further south. I have written a full statement of the facts to Mr. John Robinson, of the Peabody Museum at Salem, Mass., and Mr. Edward S. Morse, the

curator; they both agreed that the bird should be regarded as an Essex County record. According to Mr. Townsend's 'Birds of Essex County,' and Howe and Allen's 'Birds of Massachusetts,' this is the first authentic record of the occurrence of the Clapper Rail in Essex County, though both cite: "Mr. J. F. Le Baron informed me that he shot a specimen some years ago at Ipswich." C. J. Maynard, the Naturalist's Guide, p. 145, 1870.

The mounted bird will be presented to the Peabody Museum, Salem.—
WILLIAM P. WHARTON, *Groton, Mass.*

Late Flight of Woodcock on Long Island, N. Y.—On December 5, 1908, while hunting near Flanders, Suffolk Co., I flushed a Woodcock (*Philohela minor*). On December 8, after a storm and heavy rain, eleven were shot in a small swamp at Lawrence, Nassau Co., close to the New York City line. The same day one was seen in a little strip of woods about one mile from this swamp.

In 30 years on Long Island, I have never seen other than stragglers after about November 20th and do not recall ever before seeing one in December.—HAROLD HERRICK, *New York City.*

Capture of the Ruff at Seabrook, N. H.—Mr. John Hardy of Boston has kindly presented me with an adult female Ruff (*Pavoncella pugnax*) shot at Seabrook, N. H., Sept. 23, 1907, by Charles Fowler, who said it was with a flock of Black-bellied Plover.—JOHN E. THAYER, *Lancaster, Mass.*

Eskimo Curlew taken at Newburyport, Mass.—I purchased of Mr. John Hardy of the Boston Market, a male Eskimo Curlew (*Numenius borealis*) taken at Newburyport, Mass., by A. B. Thomas, August 27, 1908. He shot two, but the other bird had its head so badly shot that it could not be made into a skin.—JOHN E. THAYER, *Lancaster, Mass.*

The American Golden Plover (*Charadrius dominicus*) in Ohio in Autumn.—On October 23, 1908, I met a flock of 6 American Golden Plovers at the Grand Reservoir, Ohio, and on October 27 a pair of them was shot, together with a Baird's Sandpiper and a pair of Wilson's Snipe at the Loramie Reservoir in Shelby Co., O. Fall records in Ohio for the American Golden Plover are very rare, in fact any record of the occurrence of this species in this State is interesting and noteworthy. The female of this pair of Golden Plovers has the tip of the upper mandible curved over the lower one to the extent of about 4 mm., with the tip curving decidedly downward almost at right angles, thus forming a veritable crossbill. The cause of this formation cannot be seen, only the upper mandible seems to be rather thin and weak, when compared with that of the other specimen, nor was the bird as fat as the male.—W. F. HENNINGER, *New Bremen, Ohio.*

Wild Turkeys in Illinois.—On July 12, 1905, Mr. F. B. Smiley, 407 Security Bld'g, St. Louis, Mo., informed me that he and party killed, in October, 1903, five Wild Turkeys (*Meleagris gallopavo*) in the "Sante Fe Bottoms" ("Okaw Bottoms"), eight miles south of Bartelso, Clinton Co., Illinois. He also stated that, as far as he knew, these were the last Wild Turkeys ever seen in Illinois. It will be interesting to hear from others familiar with the subject, and to know whether other Wild Turkeys have since been observed in that State.—A. H. FELGER, *Denver, Colo.*

***Asio wilsonianus* in Shelburne, New Hampshire.**—A female American Long-eared Owl was shot on the banks of the Androscoggin River in Shelburne, New Hampshire, early in the morning of October 12, 1908, by Mr. C. D. Bullerwell of Cambridge, Massachusetts. I was visiting in Shelburne at the time and Mr. Bullerwell kindly presented the specimen to me. I have deposited it in the Museum of Mr. William Brewster.

The town of Shelburne is in the White Mountain region about twelve miles northeast of Mount Washington, in the northern part of the State. Mr. G. M. Allen, in his 'List of the Birds of New Hampshire,' published in the 'Proceedings of the Manchester Institute of Arts and Sciences,' volume IV, 1903, page 104, says, in regard to *Asio wilsonianus*: "All the records which I have for this species are from localities in the southern and central part of the State. I have never seen it in the White Mountains."—WALTER DEANE, *Cambridge, Mass.*

A Note on the English Sparrow¹ (*Passer domesticus*).—There is considerable doubt as to the source of the early importations into this country of European House Sparrows, commonly known here as English Sparrows. It is probable, like many of our human emigrants, that the breed is of mixed origin, some having been brought from England, some from Germany. There are certain local differences between the birds from these two sources which need not be discussed here. Our only object is to compare specimens taken in New England between 1873 and 1886, with specimens taken here at the present day, and with specimens taken in England at the present day.

The number of specimens is too few for deductions, but we wish to put certain measurements on record, as it is possible they may some time prove of value. A great dearth of early specimens of this un-loved bird prevails. Those examined are from the collections of Mr. Wm. Brewster and Dr. Townsend, and were all from the Boston and Cambridge region. The present day specimens are all from New England, for the most part from Arlington, Mass., while the present day English specimens were sent to Mr. Hardy in the flesh from the vicinity of Liverpool, England.

The early New England specimens are striking birds, clean, with clear whites, blacks and chestnuts. The delicate wavy lines on the breasts

¹ Read before the Nuttall Ornithological Club, Nov. 9, 1908.

of the females are plainly to be seen. The present day birds both from New England and old England are very dark and sooty, and in consequence lack these characteristics. The differences can be ascribed to feather soiling in their present sooty environments.

The following table gives the measurements in millimeters.

Locality, etc.	Wing.	Tail.	Bill.	Tarsus.
New England 1873-1886				
Average 7 ♂	78.00	56.00	12.64	14.42
" 3 ♀	73.00	53.00	11.66	15.00
New England 1907.				
Average 18 ♂	77.30	56.60	13.18	14.55
" 7 ♀	75.50	55.50	12.95	14.28
England 1907				
Average 8 ♂	75.50	54.70	12.56	15.25
" 17 ♀	72.00	51.80	12.32	13.94

It is seen that the early New England specimens average about the same in size as the present New England specimens, except as regards the bill which averages about 1 mm. larger in the present day bird. The present day English bird averages in wing and tail from 2 to 3 mm. smaller than the present day New England bird. The tarsus is about the same, while the bill corresponds more closely with the bill of the early American bird in being about 1 mm. smaller. In other words it would seem that in the early years of struggle only the more vigorous, larger birds survived and that under favorable conditions the larger size was continued with an added increase in the size of the bill. A larger series may invalidate these conclusions, but they are given for what they are worth.—CHARLES W. TOWNSEND, M. D., *Boston*, and JOHN H. HARDY, JR., *Arlington, Mass.*

Mexican Goldfinch in Colorado.—The undersigned has to record the occurrence of a male Mexican Goldfinch (*Astragalinus psaltria mexicanus*) in Denver on June 30, 1908; the bird was watched for a considerable time feeding in a vacant lot, which is within three blocks of the State Capitol Building, and was as typical and unmistakable as any the writer has ever seen in old Mexico.—W. H. BERGTOLD, *Denver, Colo.*

Northward Range of *Ammodramus lecontei*.— On May 22, 1908, I saw two Leconte Sparrows on a low marshy flat in the delta of the Athabasca River, on the south side of Lake Athabasca, opposite Fort Chipewyan. Tried for some time to flush a bird, and finally, hearing a faint squeaking in the dry dead grass, rushed noisily forward, and succeeded in scaring one male up on a dead stump and shooting it. I considered this to be rather far north for this species, until I saw a specimen collected by Mr. Harry W. Jones, at Hay River, at the western end of Great Slave Lake, June 23, 1908.— R. M. ANDERSON, *Amer. Mus. Nat. Hist., New York City*.

Correction.— Dr. Charles W. Townsend has called my attention to the fact that there are two previous records of lark sparrows at Ipswich, Mass., — one shot by him Aug. 21, 1904, one seen by him Aug. 12, 1905 — making our bird of August 28, 1908 (Auk, XXV, p. 476) the third instead of the second record, as I thought.— LIDIAN E. BRIDGE and E. D. BOARDMAN, *West Medford, Mass.*

Breeding of *Dendroica striata* at Great Slave Lake.— June 24, 1908, while crossing the burned over area on the high rocky center of Moose Island, near Fort Resolution, I stepped across a small dead spruce lying on the ground, and a small plainly colored bird darted from the mass of tall dead grass which surrounded the trunk of the fallen tree. The bird disappeared in the underbrush at once without uttering a sound. Concealing myself, I waited about twenty minutes and the bird stealthily approached the nest hopping from bush to bush, occasionally uttering a sharp, nervous *tsip* like the alarm note of the Junco. The bird proved to be a female Black-poll Warbler. The nest was placed directly on the ground in the middle of a clump of tall grasses, immediately underneath a small, fallen spruce, the trunk of which was lying about ten inches above the ground. The nest was composed of dead grasses, mixed with cottony substances and a little moss, lined with finer grasses, and a few feathers including one tail feather of a Fox Sparrow. The four eggs were advanced in incubation; whitish colored, spotted with light brown tending to form a wreath around the larger end, the wreath more distinct in some specimens than others.— R. M. ANDERSON, *Amer. Mus. Nat. Hist., New York City*.

The Black-throated Green Warbler as a Nesting Species on Long Island, N. Y.— On July 5, 1908, Mr. Francis Harper, of College Point, L. I., and I observed at close range a male Black-throated Green Warbler (*Dendroica virens*) feeding three newly fledged young about a mile north of Lake Ronkonkoma, L. I. At least one other male was heard singing in the neighborhood. As neither of us had ever before found this bird on Long Island in summer and as no definite record of its having nested there is given in the most recent publication on the birds of Long Island ('A List of the Birds of Long Island,' by Wm. C. Braislin, M. D. Abstr. Proc. Linnaean Soc. of N. Y., Nos. 17-19, pub. Oct. 22, 1907), we were at first dis-

posed to regard the observation as something of a record. In addition, Mr. Wm. Dutcher, who for many years made a particular study of the birds of Long Island, informed me that up to about ten years ago, when he ceased active field work, he had never seen a Black-throated Green Warbler on Long Island.

A further investigation, however, revealed the following two records: by Mr. A. H. Helme of Miller Place, L. I. (Abstr. Proc. Linnæan Soc. of N. Y., Nos. 13-14, 1900-1902, p. 19) that the Black-throated Green Warbler "has been found breeding on Long Island"; and by Mr. Theodore Roosevelt in 'Outdoor Pastimes of an American Hunter' (1908 edition, pages 400-401) where he writes: "It was perhaps due to the same cause (cold and wet season) that so many black-throated green warblers spent June and July 1907 in the woods on our place (Oyster Bay, L. I.); they must have been breeding though I only noticed the males.... The black-throated green warblers have seemingly become regular summer residents of Long Island.... [This bird] as a breeder and summer resident is a newcomer who has extended his range southward." The bird is not mentioned in the earlier (1905) edition of Mr. Roosevelt's book.

Correspondence with these gentlemen elicited the following replies. From Mr. Helme: "The Black-throated Green Warbler is now one of the most abundant breeding warblers in the vicinity of my home. This year there have probably been not less than fifteen to twenty pairs breeding within a circle of three miles from my house. They have greatly increased in numbers during the last ten years. A few years ago I collected a very pretty set of four eggs near Miller Place. This is the only nest I have been able to find, except a couple of old nests that had done service at an earlier date." From Mr. Roosevelt: "Of course my observations of birds around here have been rather fragmentary. Formerly I never found a Black-throated Green Warbler in summer; but both last summer and this summer they have been among our common warblers thruout the nesting season, and have evidently nested and brought up their young here. In June and July the males were singing in many different places for a radius of certainly six miles from my place."

These facts would seem to prove that within comparatively few years the Black-throated Green Warbler has extended its range into the northern parts of Long Island at least; and since inquiry among ornithologists has indicated that the present status of the bird on Long Island is little known, I have incorporated in this form what information I could gather on the subject, with the idea that it might be of interest to readers of 'The Auk.'—CLINTON G. ABBOTT, *New York City*.

Carolina Wren in Rhode Island.— During the past summer (1908) there have been at least two, and possibly more, Carolina Wrens (*Thryothorus ludovicianus*) resident at Kingston, R. I. They were not noted until late in July, but were then occasionally seen and constantly heard about until September. There is some reason to believe they bred there this

year, but unfortunately the evidence is not certain enough to establish a record. A lady and gentleman noticed a pair of small birds which had a nest in a hole in an apple tree rather late in the season. They did not think they were Chickadees, and no House Wrens were seen in the village this summer. The matter did not come to the writer's knowledge until after the young had flown. Residents of Kingston say that the Carolina Wren has been seen in the village before, but not for several years. The writer is certain from personal observation that it could not have been there in 1907.—LEON J. COLE, *New Haven, Conn.*

The Carolina Wren (*Thyothorus ludovicianus*) at Falmouth, Maine.—On October 3, 1908, a male Carolina Wren was taken at Underwood Springs, Falmouth, Maine, by Mr. Arthur H. Norton, and is preserved in the collection of the Portland Society of Natural History. It had been seen in the vicinity for some weeks previous to its capture, first attracting my attention on August 18, 1908, near the shore at Tawn landing, about an eighth of a mile from Underwood Springs. It was then associated with Robins, Chipping and Song Sparrows. It gave one form of its song, and its alarm note several times. It disappeared in a few moments, but returned to the same locality for two succeeding mornings, at about the same hour of the day.

It was not seen or heard again until about the middle of September, when its song was heard several times, but the bird was not seen. On September 22 it was seen in the same locality of its first appearance, and that day gave several variations of its song, and was very active and alert. From that time it was watched with great interest each day until the day it was taken.

During this period it was constantly in company with large numbers of Robins, Cedar-birds, Chipping, Song and White-throated Sparrows, Warblers, Vireos, Kinglets, Chickadees, Thrushes, Nuthatches, Brown Creepers, Purple Finches, Juncos, and Downy Woodpeckers: it seemed never to leave their proximity, though keeping near the shore, in shrubs and tangles about the vacant cottages.

It evidently remained within the small range of Tawn landing and Underwood Springs, a range of about an eighth of a mile in length and of small width, as it could be found at any time in some part of this section, with the same band of migrants.—MRS. ERNEST BREWER, *Woodfords, Maine.*

Capture of the Short-billed Marsh Wren (*Cistothorus stellaris*) on Long Island, N. Y.—On Sept. 12, 1908, I secured an immature female of this species, at Freeport. The bird associated with a few Long-billed Marsh Wrens in the reeds bordering a small pool of water, where the salt marshes join the mainland.—J. A. WEBER, *Palisades Park, N. J.*

Blue-gray Gnatcatcher (*Poliophtila caerulea*) in Washington County, N. Y.—On Aug. 12, 1908, I collected an adult female of this species, in a

swampy tract of woodland, among the hills of Middle Granville, N. Y. I was unable to determine whether the bird had bred in this locality, because the southern migration was well under way at the time.—J. A. WEBER, *Palisades Park, N. J.*

The Bluebird (*Sialia sialis*) in Quebec.—A pair of Bluebirds, uttering their usual call notes, flew over me within a few yards at Tadousac on July 4, 1908. The species is so rare on the north shore of the lower St. Lawrence that this occurrence seems worthy of note, for I know of no other record save that of a pair found nesting by Mr. Comeau in July, 1880, at Godbout (Merriam, B. N. O. C., VII, 1882, p. 234).

The birds I saw were traveling westward and were very possibly far from their nesting ground, as no trace of them was found later in the summer, but the cool breezes of the maritime portion of eastern Canada are not to the liking of this species, which reaches its northern limit not far from the southern boundary line.

Bluebirds occur, sparingly I imagine, about the city of Quebec, although Mr. C. E. Dionne in 'Les Oiseaux de la Province de Quebec,' 1906, states that they are there "assez commun." The summer climate of the city and its environs is, however, much warmer than even fifty miles further down the river where the influence of the cold waters of the Gulf of St. Lawrence begins to be felt.

As I had spent parts of eighteen summers at Tadousac, the pair of Bluebirds was a great surprise, and I am glad they were not of a species about the identification of which there would be the slightest doubt.—J. DWIGHT, JR., *New York City.*

Two Michigan Records.—*Ardea cærulea*. LITTLE BLUE HERON.—A short time ago I had the pleasure of examining a mounted specimen of this bird, taken May 2, 1882, in the immediate vicinity of Detroit. It is a full plumaged bird in the normal dark phase and was shot by Mr. Wm. S. Smith of 140 Grand River Ave., in whose possession it now is. Accompanying it is a full description written by the taxidermist who mounted it, including colors of fleshy parts while fresh, date, etc. This appears to be the only known Michigan killed specimen now extant, and as such is of some importance.

***Buteo swainsoni*.** SWAINSON'S HAWK.—About the middle of October a bird of this species appeared in the taxidermist shop of Mr. Arthur Borek of this city. Inquiries elicited the information that it had been killed near Hessel, 18 miles from Mackinaw, Mich., by Mr. Clarence Law. As it was already mounted when first seen the sex could not be ascertained. In plumage it closely approaches the dark phase, the underparts being part-colored with blotches of fuscous and ochre in about equal proportions, and the back, wing-coverts and head feathers heavily bordered with ochre. I am informed by Prof. W. B. Barrows that this is the second actual specimen for the State. I succeeded in obtaining the bird for my collection, numbering it 1117.—P. A. TAVERNER, *Highland Park, Mich.*

Rare Birds near Springfield, Mass.—*Sturnus vulgaris*. In April, 1908, a Starling was taken in Agawam, near Springfield. It was with a flock of blackbirds. Eleven years ago about a hundred Starlings were liberated here, but they soon disappeared.

***Oceanodroma leucorhoa*.** The last of October a Leach's Petrel was captured alive on the Connecticut River, in the extreme southern part of Northampton. There are numerous records of the presence of this bird here, the earliest being previous to 1839, when W. B. O. Peabody stated that although this bird seemed so bound to the ocean by all its habits and wants, he had one brought him that was taken near Chicopee River, in Springfield, seventy miles from the shore. It has been supposed that these petrels were driven inland by storms, but in October of this year we had no severe gales in New England that were noticed inland at Springfield; in fact, generally currents in the upper air were so sluggish that the numerous balloons that were sent up from this point were unable to cover any great distance, and it is also singular that if the appearance of these birds inland depends on storms, that they should be found here only in autumn and usually in October.

***Ammodramus nelsoni subvirgatus*.** On the sixth of October last, an Acadian Sharp-tailed Sparrow was taken in Longmeadow, near Springfield. This is the first time the presence of one here has been proved, but I believe that its appearance in this vicinity is not so rare as is supposed.—ROBERT O. MORRIS, *Springfield, Mass.*

Notes from West Virginia.—*Sphyrapicus varius*.—On June 17, 1908, I found the nest of a Yellow-bellied Sapsucker in an old dead tree near 'The Sinks' in the southern part of Randolph County. As I watched the old birds, they went back and forth continuously, making very frequent and rapid flights from the nest to a large sugar tree that stood some rods away. When I examined the sugar tree, I found that they had filled with punctures a space on the side of the tree about a foot long and several inches wide. Insects were attracted to these wounds in the bark and the old sapsuckers made this their hunting-ground. They seemed to have no difficulty in finding abundant food for their young. Two days later I passed this nesting site again. The old birds were still carrying food to their young from the same place. Although I saw them make many trips, coming and going, not a single time did they bring food from any other place. On this same trip into the Spruce Mountain region, I saw great numbers of these birds in different places.

A young female of this species was taken at Horton, near the terminus of the Dry Fork R. R., on June 16. At this place old birds and their young were flying about in considerable numbers. The Yellow-bellied Sapsucker is by far the most common woodpecker breeding in the Alleghenies of central West Virginia at 4,000 feet altitudes.

***Corvus corax principalis*.**—Northern Ravens were seen and heard a

number of times on the summit of Spruce Knob (4,860 feet alt.), June 19-22. While our party was encamped near this highest elevation in West Virginia we hoped to find this species breeding, but failed to do so.

Junco hyemalis carolinensis.— I find this note concerning the Carolina Junco, made while on the summit of Spruce Knob. "Nest of Carolina Junco, under edge of stone; lined well with dry grasses; in bed of blooming *Cornus canadensis*; four eggs." All nests found on the almost bare top of this mountain were similarly placed under the edge of protecting rocks.

Oporornis philadelphia.— At the edge of an old 'burning' near the summit of Spruce Knob, Mourning Warblers were seen. As we came down the mountain on the afternoon of June 19, we found old birds feeding their young. The rich song of this species was heard almost constantly on some parts of this mountain. An adult male was taken as it sang on the border of a large tract of rather dwarfed black spruce trees near the top of the knob. I have never seen this warbler in any other part of the Alleghenies in the breeding season.

Thryomanes bewickii.— Bewick's Wren is the common 'house' Wren of western, southern, central and northern West Virginia. This species is exceedingly common in many sections in the central part of the State, and by no means rare in any of that large region mentioned above. As one goes eastward from the interior of the State, he finds, near the summit of the Alleghenies, that *Troglodytes ædon* replaces this species. At Horton, on June 16, four species of wrens — Carolina Wren, Bewick's Wren, Winter Wren, and House Wren — were all heard in full song.

Regulus satrapa.— I took an adult male Golden-crested Kinglet on top of Spruce Knob on June 18. Two of these birds were flying about in the tree-tops.

Hylocichla fuscescens.— On an old fallen spruce log, half-hidden by branches of hemlock and Allegheny Menziesia, at the foot of Spruce Knob, we found a nest of the Wilson's Thrush. On June 20 it contained four eggs. I found this species in abundance in many of the higher sections of the State while on my trip to the mountains in the middle of last June.

Hylocichla ustulata swainsonii.— A nest of the Olive-backed Thrush was found in the top of a little spruce, on June 19, near the top of Spruce Knob. It contained one young bird and three eggs. I saw several birds of this species near the same place. It seems that this nest of mine makes the most southern record of the breeding of the Olive-backed Thrush.— EARLE A. BROOKS, *Weston, W. Va.*

Colorado Notes.—Cyanocitta cristata. BLUE JAY.—Mr. B. G. Voigt informed me a short time before his death that a Blue Jay, which I examined, had been killed by him half a mile east of Limon, Colorado, in October, 1898. Mr. H. G. Smith's note on this species published in 'The Auk' (Vol. XXII, pp. 81, 82) was taken at Wray, Colorado, just over the Nebraska line. Wray is 165 miles a little north of east of Denver on the

C. B. and Q. Ry., and Limon is 90 miles at about the same angle south of east of Denver on the U. P. Ry. This brings the little thief that stole hazelnuts which I, year after year in my boyhood days, gathered and spread upon the woodshed roof to dry, 75 miles closer to my present home: and I wonder if the little tormentor is following me here to steal the hazelnuts that I purchase in the Denver market. I wish that I might calculate his westward progress, but I cannot, for this Blue Jay at Limon was killed four years before those were observed at Wray.

***Æchmophorus occidentalis*.** WESTERN GREBE.—I have in my collection a skin of one of these birds taken Nov. 9, 1902, at Citizens' Lake, west of Fort Logan and a few miles southwest of Denver, Colorado. Mr. H. G. Smith reports (*Nidologist*, III, 1896, p. 48) three of this species for Colorado, and Mr. W. W. Cooke also reports (*Birds of Colo.*, p. 191) three of this species for this State. There are no other records for our State as far as the writer knows.

***Prozana carolina*.** SORA RAIL.—Sept. 2, 1903, I found dead on the surface of the ice near the terminal moraine of Arapahoe Glacier a bird of this species in a rather bad state of decomposition. The altitude of Arapahoe Peak (*Bull.* 274, U. S. Geol. Surv. p. 139) is 13,500 feet, and the place on Arapahoe Glacier, which lies at the foot of Arapahoe Peak, where the bird was found is perhaps 1000 feet less in altitude.

I desire to ask Mr. W. W. Cooke, or anyone else who is studying bird migrations, whether it is usual for birds of the rail group to migrate at such an altitude. This is about 3,500 feet higher than is indicated in the note by Mr. Cooke (*Birds of Colo.*, p. 199), where he says that it "breeds from Middle Park up the Blue River to about 9,000 feet." If it breeds at such an altitude, I would expect it to move down nearer the plains before starting on its southern flight. Possibly we may yet find it breeding at the lakes below Arapahoe Glacier, but thus for neither Judge Junius Henderson of Boulder, Dr. W. H. Bergtold of Denver nor I, all of whom together studied the birds of that vicinity, have found a living specimen there.—A. H. FELGER, *Denver, Colorado*.

Notes of Occurrence and Nesting of Certain Species additional to the 'Birds of Colorado.'¹—***Gallinago delicata*.** WILSON'S SNIPE.—Has been found nesting with regularity for the past five years, and in fair numbers, about the marshes and farming region of a locality in Boulder County, ten miles northeast of Boulder City.

***Callipepla squamata*.** SCALED PARTRIDGE.—An abundant resident the year round throughout the farming region on both sides of the Arkansas River, from Pueblo east to the Colorado-Kansas State line; there is scarcely a farm that does not have from one to three flocks about the

¹ The *Birds of Colorado*, by W. W. Cooke. March, 1897. Further notes on the *Birds of Colorado*, by W. W. Cooke, an appendix, to the above, March, 1898, and a Second Appendix to the *Birds of Colorado*, by W. W. Cooke, May, 1900.

buildings, to which the birds hold very close during the winter. In the spring, a few nests are placed in the garden and other locations, close to the protecting influence of the household. I have observed the birds to be far more quiet and approachable, by persons to whom they were accustomed, than any 'Bob-whites' which have come under my observation.

Columba fasciata. BAND-TAILED PIGEON.—It is not unusual to see small flocks of these birds in Estes Park. I have observed them every summer, mostly during the latter half of the summer, indicating their nesting at some other locality with a late summer movement or flight.

Otus flammeola. FLAMMULATED SCREECH OWL.—One nest with female bird found and taken in Estes Park, June 15, 1903; now in Collection at the State Agricultural College, Fort Collins, Colo. Also one nest with female taken from same vicinity, June 18, same year, now in the Collection of the Hon. J. E. Thayer, Lancaster, Mass.

Myiarchus cinerascens. ASH-THROATED FLYCATCHER.—A specimen of this bird, with nest and eggs, taken in the Naturita Valley, southwestern Colorado, by C. H. Smith, was sent to me for identification. Mr. Smith reports it as "a summer resident, fairly common."

Empidonax traillii. TRAILL'S FLYCATCHER.—Found nesting June 30, 1904, west of Estes Park, at an elevation of 10,000 feet. Also found nesting at a slightly lower elevation, but in the same country, July 5, 1905. Both nest situations were identical, in that they were located three and four feet from the ground, upon a root of the upright stand, formed by the roots and adhering dirt of large overturned pine trees. Surroundings wet and swampy.

Corvus corax sinuatus. AMERICAN RAVEN.—A constant resident in the heavy cañon of the San Miguel River, southwestern Colorado. Nests are situated on inaccessible ledges against the cañon wall midway between top and bottom. If the nest is disturbed the birds will choose a more difficult place for another nest, giving evidence of an instinct far superior to that of the Golden Eagle in this respect. If not disturbed the same nest is used from year to year.

Coccothraustes vespertinus montanus. WESTERN EVENING GROSBEAK.—In August and September of 1902, I found young birds at two places in the mountains, between my farm at the foot-hills, Boulder Co., and Estes Park. In 1903 the birds were abundant throughout Estes Park and westward to higher altitudes, 7500 to 9500 feet. In 1904 they were equally abundant, but during the following three years they were absent from that locality.

On July 4, 1903, a nest was found in Estes Park, at an elevation of approximately 9000 feet. It was in a large pine tree, on a heavily wooded hillside, and about forty feet from ground, halfway out on a long limb and dangerous to obtain.

Amphispiza nevadensis. SAGE SPARROW.—One specimen, male, taken at my Boulder County farm, east of the foot-hills, March 18, 1904.

Guiraca caerulea eurhyncha. WESTERN BLUE GROSBEAK.—During

June, 1902, I observed several pairs about the farm in Boulder County and took two specimens. I say 'pairs' because they were thus found and not in flocks.

Catherpes mexicanus conspersus. CAÑON WREN.—Somewhat common constant resident, through the lower foot-hill elevations of Boulder County. That this species has been persistently overlooked, I can only account for by the fact of their being such an early spring breeder.

While investigating the nests of two pairs of Golden Eagles on March 27, 1907, I was agreeably surprised to find a pair of these wrens conveying nesting material to a ledge in a small cañon. With snow in abundance on the north slopes, I sat in the sun and watched them for over two hours. As this was my first acquaintance, I shall never forget the impression made by the volume and clear, whistle-like effect of their few notes,—not shrill, but filling the cañon with a volume and penetration out of proportion to a bird so small. I returned to this locality one week later, April 4, 1907, and found the nest completed, but containing only three eggs, which we did not disturb. The nest was in a sheltered crevice, on a rock projecting from the face of a sixty foot cliff. My young friend went down a rope to the site, from above; the only possible way of reaching it. Mr. Brunning, at whose place I was staying, mentioned three localities in which were the nesting sites of this wren. One, an upper ranch (altitude 7000 feet), and two near-by mining locations on which he worked at odd times during the year. He states that "the birds would appear each year about Thanksgiving time, remain all winter and through the spring but disappear during the summer." It did not occur to him to make note of their time of leaving, until he realized they were gone (a common difficulty with fall migration data).

Such an early nesting date, has been equalled or exceeded only by three species in northern Colorado, viz., the Mexican Crossbill, Great Horned Owl and Golden Eagle.

Thryothorus bewickii bairdi. BAIRD'S WREN.—Has been taken nesting in the Naturita Valley, southwestern Colorado, by C. H. Smith, a reliable observer, who reports it as "not common in his locality."—FRED. M. DILLE, *Denver, Colo.*

RECENT LITERATURE.

Chapman's '*Camps and Cruises of an Ornithologist*.'¹— Says the author: "During the past seven years, with the assistance of artist and preparateur, I have devoted the nesting season of birds to collecting specimens and making field studies and photographs on which to base a series of what have been termed 'Habitat Groups' of North American birds for the American Museum of Natural History. These groups," it is further stated, "are designed to illustrate not only the habits and haunts of the birds shown, but also the country in which they live." The groups, therefore, contain not only the birds, with their nests and young, placed in a facsimile reproduction of their original surroundings, but the background forms an accurate panoramic representation of the adjoining country. Thus is shown not only the character of the immediate location of the nest, but a considerable area characteristic of the haunts of the species, reproduced from studies by the artist on the spot, aided by photographs. Thus are introduced various types of physiographic conditions, which render the groups geographically as well as ornithologically instructive. They are unrivalled by any similar reproductions elsewhere, no expense having been spared to secure accuracy of detail, while the panoramic backgrounds, some of them nearly thirty feet in length, give ample space for comprehensive scenic effects.

The assembling of all this material entailed extensive journeys, and the results accurately portray strikingly diverse types of country, ranging from subtropical scenes in the Bahamas and the Everglades of Florida to the deserts of Arizona, the prairies and badlands of Nebraska and Wyoming, the irrigated lands of interior California, the marshy lakes of Oregon, and the alpine summits of the Rocky Mountains in Alberta, as well as marshes and cliffs nearer home. To quote again from the author's preface: "No ornithologist, I imagine, has ever pursued his calling with greater pleasure and satisfaction than I have experienced in gathering the material and data for these groups of birds. Not only has it been my fortune to behold some of the most interesting and remarkable sights in the world of birds, but it has been my privilege to have them reproduced in so admirable a manner that they convey to others a wholly adequate conception of the scene itself." The purpose of the present book is "now further to perpetuate these experiences and studies by telling the story of the various expeditions of which the groups were the objects, adding such information concerning the birds observed as seems worthy of record, and illustrating

¹ *Camps and Cruises of an Ornithologist* | By | Frank M. Chapman | Curator of Ornithology, American Museum of Natural History | Fellow of the American Ornithologists' Union; Author of | "*Handbook of Birds of Eastern North America*" | "*Bird-Life*"; "*Bird Studies with a Camera*," etc. | With 250 photographs from Nature | by the Author | New York | D. Appleton and Company | 1908 — 8vo, pp. xvi + 432, with 250 half-tone illustrations. November, 1908. \$3.00 net.

the whole with many photographs from nature and a number of the groups themselves."

The book is divided into eight parts, as follows: Part I, 'Travels about Home,' in which are treated The ways of Jays, A morning with Meadow-larks, Bird-nesting with Burroughs, A Nighthawk incident. Part II, 'The Bird-life of two Atlantic Coast Islands'—Gardiner's Island and Cobb's Island. Part III, 'Florida Bird-life'—Pelican Island, the Florida Great Blue Heron and the Water Turkey, the American Egret, Cuthbert Rookery. Part IV, 'Bahama Bird-life'—the Flamingo, the Egg Birds, the Booby and the Man-o'-War Bird. Part V, 'The Story of Three Western Bird Groups'—the Prairie Hen, a Golden Eagle's nest, Cactus Desert Bird-life. Part VI, 'Bird Studies in California'—the Coastal Mountains at Piru, the coast at Monterey, the Farallones, the San Joaquin Valley at Los Banos, Lower Klamath Lake, the Sierras. Part VII, 'Bird-life in Western Canada'—the Prairies, the Plains, the Mountains, the White Pelican. Part VIII, 'Impressions of English Bird-life,' and indexes. An 'Introduction' of eight pages reveals to the reader some of the methods and devices by which the photographic results shown in the present volume were obtained.

The foregoing will sufficiently explain the scope, purpose, and general character of this exceptionally interesting and, in many respects, remarkable book, where a wealth of photographic illustrations so effectively supplements the text. It remains therefore only to say that the story of these varied experiences is most modestly yet effectively and pleasingly told, without resort to anything beyond simple and direct statement of events, more varied and opportune than has probably ever before fallen to the lot of an ornithologist. There were, of course, mishaps and unpleasant experiences, but they leave slight trace in the author's narrative, so full of new, first-hand information about birds whose home-life was previously, in many cases, by no means well known. The book is appropriately dedicated to Hermon C. Bumpus, Director of the American Museum of Natural History, and "to those members of the Museum whose coöperation made possible the work on which it is based."—J. A. A.

Preble on the Birds of the Athabaska-Mackenzie Region.¹—This admirable work of nearly 600 pages and numerous illustrations is based mainly on the field work of Mr. Preble during two expeditions, the first in 1901, the second in 1903-'04. The publication of the report having been unavoidably delayed till the present year (1908), it represents the state of knowledge of the region down to the spring of 1908. It includes

¹ A Biological Investigation of the Athabaska-Mackenzie Region. By Edward A. Preble, Assistant, Biological Survey. Prepared under the direction of Dr. C. Hart Merriam, Chief of Bureau of Biological Survey. = North American Fauna No. 27, October 26, 1908. 8vo, pp. 574, pll. i-xxv (including map of the region), and 16 text figures. Birds, pp. 251-500.

not only annotated faunal lists of the mammals, birds, reptiles, batrachians, and fishes, and trees and shrubs of the region, but a very full description of the physical geography and climatology of the Mackenzie Basin, a detailed account of the routes traversed by Mr. Preble and his assistants (his brother Alfred E. Preble, in 1901 and 1903, and Merritt Cary in 1903), and a summary of the previous explorations and collections made in the region. The work has been so well done that Mr. Preble's report will remain for all time a standard source of information on the biology and early explorations of this immense and hitherto much neglected area. In 1903-'04, Mr. Preble passed the winter at Fort Simpson, and thus had an opportunity to become familiar with winter conditions at this remote subarctic post.

Each of the different physical areas, from the Athabaska Valley to the Barren Grounds, is separately treated in detail. The life zones of the Athabaska-Mackenzie region — the Arctic, Hudsonian, and Canadian — are illustrated by a colored map (plate ii), based on very thorough knowledge of the subject, Mr. Preble's previous explorations in the Hudson Bay region¹ being of special service in mapping the country bordering Hudson Bay.

The ornithological portion of the report (pp. 251-500) forms an elaborately annotated list of the (approximately) 293 species and subspecies "authoritatively recorded from the region treated in the present report. In the account of each species," says the author, "our own observations are usually given first, in chronological order, the published records following. Of the published references relating to the various species only those have been utilized which best represent the distribution, dates of migration, breeding, and other interesting features of their life history, preference usually being given to the notes earliest published." Authorities are given in footnotes, in place of the immensely inconvenient method of giving references to titles scheduled at the end of the work, now so much in vogue; notes not accompanied by references "are derived from manuscript records or verbal communications," and are duly accredited in the text. The classification and nomenclature is that of the A. O. U. Check-List, including the many changes of the Fourteenth Supplement. The A. O. U. Code is strictly followed in respect to the authority for specific and subspecific names, which is to be enclosed in parenthesis *only when the species or subspecies is used in combination with a generic name different from the one employed by the original describer*. This was the original intent of the use of the parenthesis for authorities, but in recent years the names of authorities have by many writers been improperly placed in parentheses to denote not only this, but any change in the status of the species or subspecies from the original designation.

An annotated bibliography of 23 pages — from Hearne, 1791, to Seton,

¹ A Biological Investigation of the Hudson Bay Region, North Amer. Fauna No. 22, 1902.

1908 — is a valuable guide to the literature of the subject, and will be of great use to future investigators of this general region. The large number, of half-tone plates and text figures are an important addition to the report and include, besides maps of the general region and of the life zones, several distribution maps for the more important species of mammals, many landscape views, and views of the Hudson Bay Company's posts, including some of the old Forts of the early days — landmarks of the greatest historic interest. As already implied, Mr. Preble's report is a mine of information regarding the early exploration and present and past conditions of the vertebrate fauna of arctic and subarctic Canada. — J. A. A.

MacFarlane on the Birds of Northwestern Canada.¹ — In 1891 Mr. MacFarlane published in the 'Proceedings' of the U. S. National Museum (Vol. XIV, pp. 413-446) his 'Notes on and List of Birds and Eggs collected in Arctic America, 1861-1866.' The present 'List of Birds and Eggs' covers a subsequent period (1880-1894) of the author's explorations, and relates mainly to observations made "in the northern portions of the new Province of Alberta; in New Caledonia, in British Columbia; and Cumberland, in the Province of Saskatchewan." The observations are fragmentary, and the reader will share with the author his regrets that he did not continue "at Forts Simpson, Chipewyan, St. James and Cumberland House, where he was successively stationed from 1866 to 1894," his observations with the same interest and assiduity as at Fort Anderson in previous years. His shortcomings in this respect he holds up as a warning and a stimulus to the officers of the Hudson Bay Company and others who may visit or traverse northern Canada as surveyors and prospectors to do whatever they can "in the way of elucidating and otherwise advancing the Natural History of the great Dominion."

The list includes about 220 species, the annotations averaging rather more than a page to each; while they include much original information they are often extended by quotations from various published sources, notably from Bendire's 'Life Histories of North American Birds.' These, however, are always pertinent, since much of MacFarlane's ornithological material was sent to the Smithsonian Institution, and passed through Major Bendire's hands, thus forming his principal source of information on the nesting habits and breeding ranges of northern birds. Incidental reference is made, under nearly every species, to the manner of its representation in the Ottawa (Dominion) Museum, with a view of inspiring

¹ Through the Mackenzie | Basin | a Narrative of the Athabaska and Peace River | Treaty Expedition of 1899 | By | Charles Mair | English Secretary of the Half-breed Commission; Author of | Tecumseh: a Drama, etc. | With a Map of the Country Ceded and numerous photographs of | Native Life and Scenery | Also | Notes on the Mammals and Birds of | Northern Canada | By Roderick MacFarlane | Retired Chief Factor of the Hudson's Bay Company | — | Toronto | William Briggs | 1908 — 8vo, pp. 494, map, and 25 half-tone plates. — 'List of Birds and Eggs observed and collected in the North-West Territories of Canada, between 1880 and 1894,' by R. MacFarlane, pp. 285-447. \$2.00; by mail, \$2.25.

interest in its deficiencies. To a certain extent, the present 'List' gives a résumé of the results of MacFarlane's long period of natural history work in northern Canada, and as such is a contribution of unusual interest. The numeration and nomenclature are those of the A. O. U. Check-List, but through some inadvertence, a number of the water birds follow the Passeres, with no note of advice or warning that such is the case. Also, on p. 422, the heading "636. Black and White Warbler — *Mniotilta varia* (Linn.)" is given twice; as its second use evidently relates to that species, the preceding species is left nameless and not easily identifiable.

Mr. MacFarlane's 'Notes on the Mammals,' occupying pages 151-283, and preceded by a portrait of the author, is an especially important contribution to the mammalogy of the region, the statistical and geographical information respecting many of the fur-bearing animals being exceedingly valuable. The nomenclature of the list "has been carefully revised by the naturalists of the U. S. National Museum," and is hence fully up to date, and stamps the list as thoroughly trustworthy.

Mr. Mair's portion of the work, occupying the first 150 pages, gives a vivid picture of the topographic and climatic conditions of the country traversed by the treaty expedition of 1899, of which he was a member, and contains also much historic information of fascinating interest. Mr. MacFarlane's portion of the work contains descriptions and illustrations of a number of the old Hudson Bay Company's posts, the names of which have long been household words in natural history annals — Forts Anderson, McPherson, Chipewyan, Resolution, Good Hope, etc. — J. A. A.

Knights' 'The Birds of Maine.' — In a portly volume¹ of nearly 700 pages, Mr. Knight has given the ornithological public a useful manual of the bird fauna of the State of Maine. The analytical keys and the descriptions of the species, it is stated, are compiled and adopted from Ridgway's 'Manual' and 'Birds of North and Middle America,' Chapman's 'Hand-book,' and other standard sources. The descriptions are followed by a brief summary of the distribution, including breeding and winter ranges, followed by the county records of the species, with the authorities, a list of which is given in the Introduction. The life histories are largely based on the author's own observations and experience, and vary in length, according to the species, from a half page to several pages, and relate mainly to the bird's occurrence in Maine. The nomenclature is that of the A. O. U. Check-List and its Supplements down to the Thirteenth, the Four-

¹ The Birds of Maine | With Key to and Descriptions of the various | species known to occur or to have occurred | in the State, an Account of their Distribu- | tion and Migration, showing their relative | abundance in the various Counties of the | State as well as other regions, and con- | tributions to their Life Histories | By | Ora Willis Knight, M. S. | Member of Maine Ornithological Society, Member American Chemical Society, | Member American Ornithologists' Union, Etc. | Bangor, Maine | 1908 — 8vo, pp. vii + 693, map, and 25 half-tone plates. \$3.50, express paid. Regular edition, 200 copies; subscription edition, 300 numbered and signed copies.

teenth Supplement having appeared too late to be available. The number of species admitted is 327, including 2 introduced species, classified in the 'Summary' following the main text as: permanent residents, 26; summer residents, 115; migrants, 75; winter residents and winter visitants, 40; accidental and casual, 67; 3 are extinct and one other nearly so. In the 'Summary' these several classes are enumerated, with an indication of their distribution within the State, those chiefly or entirely confined to the Canadian fauna being designated by an asterisk. Thirty additional species are given in a 'Hypothetical List,' which includes not only "species which may be almost certainly expected to occur, though not as yet positively detected," but others that have been included in previous lists on erroneous evidence, and "never likely to occur here."

Following the 'Summary' is a section on 'Faunal Areas,' illustrated by a map, from which it appears that the southwestern part of the State is Alleghanian and most of the rest of the State Canadian, the Hudsonian being limited to the summits of the higher mountains and to a few points along the coast, from Mount Desert Island eastward. A narrow strip of Canadian extends westward along the coast, backed by the Alleghanian inland. A 'Bibliography' of about 130 titles, arranged chronologically, and an index, complete the volume.

'The Birds of Maine' is well planned and evidently written with great care and pretty full knowledge of the subject. It has, however, its faults of detail, which, while they may not seriously impair its usefulness, are to be regretted. The author's style, while generally good, lapses here and there into colloquialisms and infelicities which somewhat mar the dignity of a work of such importance. As examples may be cited the reference to the Redpolls in the 'Key to the species of Fringillidæ,' the account of the feeding of young Goldfinches, the constant use of pair for pairs ("ten pair," "1000 pair," etc.), and *Accentator* for *Accentor*, etc. While the author follows the A. O. U. Check-List, as regards the status of forms, he has done so in a few instances under protest, in some cases with reason, as shown by the Fourteenth Supplement, published since his book went to press, in others through inadequate knowledge of the forms in question. There are few typographical errors in the technical names; but we regret to note that the records of local occurrences, in the case of the rarer species, particularly of some of the water birds, are incomplete, especially as regards the latest published information regarding their distribution on the Maine coast. This, however, may be due to the long time the book was in press, since the omissions relate mainly to the early part. Although the late Dr. Wyman's paper on the occurrence of remains of the Great Auk on some of the islands of Casco Bay is given in the bibliography there is no reference to it under the species; and the winter records for the Myrtle Warbler refer only to Cape Elizabeth, omitting others of equal interest relating to other localities. These are but examples of a number of omissions in respect to details of sometimes considerable importance. Unpublished records are often not clearly distinguished from those that have been

published; to have made this distinction, in the case even of only the rarer species, would of course have considerably increased the size of the book, and for this reason may have been omitted, but the omission is an inconvenience to the worker in search of the historical sequence of records. In brief, Mr. Knight has given us such a good book on the Birds of Maine that we regret to find it not an entirely up-to-date authority on Maine ornithology.—J. A. A.

Godman's 'Monograph of the Petrels.'—Part III of this excellent Monograph¹ contains descriptions of 29 species, of which 27 are figured. Twenty-three of the species belong to the genus *Æstrelata*, of which three appear to be known only from the original types. *Priofinus gelidus* of recent authors (ex *Procelaria gelida* Gmelin) is apparently referred to *Puffinus kuhli*, the author recognizing only one species of *Priofinus*, and correcting the faulty synonymy given by Salvin.

The species treated in the present Part are many of them little known in life, so that nothing can be said of their habits and distribution. As in the previous Parts of this work, the biographies of the well-known species are given at considerable length, as is the general history.—J. A. A.

Gadow's 'Through Southern Mexico.'²—Dr. Gadow's account of his travels in southern Mexico is not to any great extent ornithological, the reptiles and general character of the country visited being the principal theme. The work is well written and thoroughly interesting from beginning to end, the author's style being terse and graphic, and the subjects treated include the physiographic features of the country and their relation to the fauna and flora, its present and former human population, with descriptions of the celebrated ruins of Tepotztlan, Miltla, and Monte Alban, a discussion of the 'Toltec question,' the Aztec hieroglyphs, and the calendric system. The author made many excursions to out of the way places reached only by pack trains, his explorations including the low coastlands, the interior plateau, and the Volcanoes of Popocatepetl and Iztaccihuatl. Interspersed with interesting incidents of travel are discussions of the effect of environment upon animals and plants, colors and patterns, convergent development, the struggle for existence, 'warning' colors, and adaptive modifications. The information regarding the general character of the country and its varied inhabitants, human, animal and vegetable, is varied and explicit, and one can hardly turn to a better book for information regarding southern Mexico. The numerous illustrations relate to a great variety of subjects and are valuable adjuncts to the text.—J. A. A.

¹ Part III, pp. 153-232, plates l-lxxviii. September, 1908. For notices of previous Parts see Auk, XXV, 1908, pp. 244, 338.

² Through Southern | Mexico | being an account of | the travels of a Naturalist | By | Hans Gadow | M. A., Ph.D. | F. R. S. | With over one hundred and sixty full page and other | illustrations and maps | Witherby & Co. | 326 High Holborn London | 1908 — 8vo, pp. xvi + 527, maps, numerous half-tone plates and text figures.

Report on the Immigration of Summer Residents in England and Wales in the Spring of 1907.—The third Report of the Committee appointed by the British Ornithologists' Club on the spring migration of birds into England and Wales forms Volume XXII of the British Ornithologists' Club, bears date October, 1908, and relates to the spring migration of 1907,¹ with also some notes on the fall migration of 1906. The number of species 'scheduled' is 33, the arrivals of 30 of which are indicated by maps for each. There is a "summary of the records" for 65 additional species, for which in most instances the observations are few. The notes on migratory movements during the autumn of 1906 relate to about 25 species.

This third report, so far as it relates to the spring immigration of 1907, "does not differ much from its predecessors, and, as before, deals solely with the movements of the year, no attempt having been made to compare it with the previous year's records." The season was somewhat exceptional, "for though the latter part of March was brilliantly fine, wintry weather was experienced throughout the whole of April. . . . Stragglers of various species appeared at a somewhat early date; but the main body of birds arrived later than usual, and the immigration was at its height during the early part of May. As a result of this the 'rushes' or waves of immigrants were less marked and the actual period was in many cases considerably prolonged." As in previous Reports, a daily account is given showing the condition of the weather and the arrivals of birds, in parallel columns. The report closes with a list of observers, about 200 in number, and their location by counties.—J. A. A.

The Heath Hen.²—The Report of the Chairman (Dr. George W. Field) of the Massachusetts Commissioners on Fisheries and Game for the year 1907, gives the present status of the bird in its last foothold on the island of Martha's Vineyard, Massachusetts. Besides a brief summary of its former range and early widespread extirpation, there are several pages devoted to an account of its present status and habits as personally observed by Dr. Field and his assistant Mr. Gates in May, 1906, and recommendations of measures to be taken to ensure its protection and future increase.

¹ Report on the Immigration of Summer Residents in the Spring of 1907: Also Notes on the migratory movements during the Autumn of 1906. By the Committee appointed by the British Ornithologists' Club = Bulletin of the British Ornithologists' Club, Vol. XX, October, 1908. Pp. 202, with 30 maps.

The previous reports of the Committee are, 1st, for 1905, 2d, for 1906, and form respectively volumes, XVII and XX of the 'Bulletin' of the British Ornithologist's Club, noticed in this Journal as follows: Auk, XXIII, Oct. 1906, p. 472; *ibid.*, XXIV, July, 1907, p. 357.

² A Report upon the Eastern Pinnated Grouse or Heath Hen (*Tympanuchus cupido*). An anonymous repaged reprint of 13 pages, from the Forty-second Annual Report of the Massachusetts Commissioners on Fisheries and Game for the year ending December 31, 1907.

On January 11, 1908, the number of birds existing on the island "was not less than 55 nor more than 60." While it appears to be most at home in the scrub oak and pitch pine barrens, it is believed that it could be naturalized once more in almost any section of the State. Fortunately it has the protection "of the best public opinion in the island," and with the thorough precautions for its preservation and increase adopted by the game commissioners of Massachusetts, under a special act of the legislature providing for it a reservation of 1,000 acres of unimproved lands on Martha's Vineyard, its future increase seems assured. The Report closes with a list of subscribers to a fund for the purchase of land for a reservation and for guarding such reservation from forest fires, the total sum here reported amounting to \$2,420. Aside from the economic and practical bearing of the report, it is a valuable contribution to the life history of this interesting species.— J. A. A.

Woodruff on Causes of the Scarcity of the Ruffed Grouse.¹— The marked scarcity of the Ruffed Grouse in the northeastern States in 1907 has been attributed to various causes; from Dr. Woodruff's investigations it seems to have been due to a combination of a number of untoward conditions. These are primarily "(1) The unusual abundance of foxes, and, particularly, goshawks during the winter of 1906–1907. (2) The extremely cold, wet, and late spring of 1907. (3) An epidemic of some disease or parasite, or both, just which we cannot now determine." He considers the cold, wet, late spring to have been unquestionably the most serious, and that to this was indirectly due the destruction of most of the adult females and young, through the impairment of their vitality so that they readily succumbed to disease or the attacks of parasites.— J. A. A.

Forbush on the Economic Value of Birds to Agriculture.— For a number of years the writings of Mr. Forbush have been among the most important contributions to the subject of economic ornithology. They have consisted mainly of reports prepared by him as ornithologist to the Massachusetts State Board of Agriculture, and published by the State. Of several of these² a second edition, revised to June, 1908, has recently been issued, showing that their importance is duly recognized by the Massachusetts State Board of Agriculture. As they were duly noticed in these pages when first published, a further account of them in the present connection is unnecessary, although some new matter is added and other changes introduced in these revised editions.— J. A. A.

¹ The Ruffed Grouse. A Study of the Causes of its Scarcity in 1907. By E. Seymour Woodruff. Pp. 22. (A repaged reprint from the Thirteenth Annual Report of the Forest, Fish and Game Commission of the State of New York.)

² (1) Two Years with the Birds on a Farm. By Edward Howe Forbush. Second edition, 1908, pp. 44, with 8 illustrations. (2) Birds as Protectors of Orchards, Third edition, June 1908, pp. 19. (3) Special Report of the Decrease of Certain Birds, and its Causes with Suggestions for Bird Protection. Second edition, June, 1908, pp. 118.

Carriker's 'Notes on Costa Rican Formicariidæ.'—These notes¹ record *Myrmotherula axillaris* (Vieill.) as new to Costa Rica; give *Drymophila stictoptera* Lawr. as the male of *D. lemosticta* Salvin; raise *Myrmelastes exsul occidentalis* Cherrie to a full species; and discuss the range in Central America of the light and dark forms of *Cercomacra tyrannina*.—J. A. A.

Craig on the Voice in Pigeons as a Means of Social Control.²—The author considers (1) Social Development of the Young; (2) Social Life of Breeding Birds; (3) Social Relations outside of the Family. The present paper is announced as preliminary to a book on the general subject of the development of bird songs which the author hopes soon to publish, giving the results of several years of investigation of the subject. His conclusions are that utility of the voice in birds is of much wider scope than has hitherto been suspected. "The voice," he observes, "is a means of social control: that is to say, the voice is a means of influencing the behavior of individuals so as to bring them into coöperation, one with another." The illustrations are here drawn from the domestic pigeon. He claims that a bird is not "the good machine that naturalists have supposed it to be. No internal machinery, no system of instincts, be it ever so perfect, could carry an individual dove through the vicissitudes of social life without the agency of social control.... what is meant is, that to treat the behavior as instinctive is to give it an inadequate description. The inadequacy consists in studying the individuals, and in treating the individual as a distinct entity. What is needed is, to transcend this individualistic view point, and to see that the instincts of the individual can effect their purposes only when they are guided and regulated by influences from other individuals." The song is considered as one means of social control, and its uses are found to be numerous and complexly interrelated, of which a partial list is given.—J. A. A.

Taverner and Swales on the Birds of Point Pelee, Ontario.³—Point Pelee, near the western end of Lake Erie, "forms the most southern point of the main land of the Canadian Dominion." It is V-shaped, two long low sandbars enclosing a "swamp of varying degrees of wetness," and several small ponds, while portions are wooded. It thus forms a resort for all classes of birds. It also seems to form a well marked migration route for a large area to the northward, and is further, according to the authors, tinged with such intrusive southern forms as the Cardinal, Yellow-breasted Chat, Blue-gray Gnatcatcher and Carolina Wren, which "have

¹ Notes on Costa Rican Formicariidæ, By M. A. Carriker, Jr. Ann. Carnegie Museum, V, No. 1, 1908, pp. 8-10.

² The Voices of Pigeons regarded as a means of social control. By Wallace Craig. Amer. Journ. of Sociology, XVI, No. 1, July, 1908, pp. 86-100.

³ The Birds of Point Pelee. By P. A. Taverner and B. H. Swales. The Wilson Bulletin, Vol. XIX, 1907, pp. 37-53, 82-99, 133-153; Vol. XX, 1908, pp. 79-96 107-129. Also separate.

formed permanent settlement here." "Taken all together, the bird life of Point Pelee, the islands adjoining and the opposite American shore forms a subject of absorbing interest and ground where migrational phenomena of the Great Lakes can perhaps be studied to better advantage than anywhere else in this section."

In an introduction of about ten pages the location and the physical and biotic conditions of the locality are described in detail, following which is an extensively annotated list of 209 species positively identified as occurring in this limited area. Supplemental notes follow, with comment on hypothetical migration routes.

The list is based on the combined "Notes of the members of the Great Lakes Ornithological Club, a small organization formed for the purpose of coöperation and intensive study of the birds of the Great Lakes Region," the observers particularly mentioned including, besides the authors, W. E. Saunders, J. H. Fleming, A. B. Klugh, J. E. Keays, and others.—J. A. A.

Rockwell on the Birds of Mesa County, Colorado.¹—This carefully compiled list¹ "includes 203 species, 159 of which have been definitely recorded for Mesa County, while the remaining 44 species. . . will probably be reported from there in the future." They are wide-ranging species, included on the basis of their known occurrence in contiguous districts, and are distinguished by being printed in smaller type than the others. The list is based primarily on the author's knowledge of the birds of the county gained during a residence there of two entire years and portions of six others, his observations being supplemented by information contributed by a considerable number of other observers, as duly accredited in the list. The list is offered as a "purely preliminary" one, but forms a very substantial basis for future additions. The nomenclature is only in part brought down to the basis of A. O. U. Fourteenth Supplement, which possibly was not available at the time the list went to press.—J. J. A.

Bryan on the Birds of Molokai.²—This paper is the outcome of a collecting trip in the mountains of Molokai, Hawaiian Islands, during two months in 1907 (April 15–June 15), for the purpose of obtaining material for the Bishop Museum. One of the primary objects of the expedition was to secure specimens of the Hoa or Black Mamo (*Drepanorhamphus funereus*), the search for which proved successful, three specimens being obtained, although it has of late been supposed to be extinct. There is also a long

¹ An Annotated List of the Birds of Mesa County, Colorado. By Robert B. Rockwell. The Condor, Vol. X, No. 4, July–August, 1908, pp. 152–180, 2 maps, and 9 half-tone illustrations.

² Some Birds of Molokai. By Wm. Alanson Bryan, formerly Curator of Ornithology and Taxidermist in the Bishop Museum. Occas. Papers of the B. P. Bishop Museum, Vol. IV, No. 2, 1908, pp. 43–86, with a map and 7 half-tone full-page illustrations.

account of the rare *Æstrelata sandwichensis*, known previously from one young and two adult specimens, of which Mr. Bryan found a colony and secured a large series of adults, of which measurements are given of eight males and twelve females. Although closely related to *Æstrelata phæopygia* of the Galapagos Islands, it proves to be somewhat smaller, with a slenderer bill and slightly different in color. Mr. Bryan's annotated list of 28 species contains many important notes on other rare species, and one — *Phæornis rutha* — is described as new.— J. A. A.

Annual Report of the National Association of Audubon Societies for 1908.¹

— The fourth annual report of the President, William Dutcher, occupies about fifty pages of the November–December number of 'Bird-Lore' for 1908, and contains the 'President's Address' (pp. 277–284), the Report of the Secretary' (pp. 284–287), 'Reports of Field Agents' (288–295), 'State Audubon Reports' (pp. 296–318), a List of the Officers and Members (pp. 319–325), and the Report of the Treasurer (pp. 326–329).

As stated by the President: "What this Association has accomplished during the few years of its existence speaks for itself, and it may be truly said, I think, that very few organizations of a mixed character, such as the National Association, which is partly philanthropic and esthetic, but mostly economic, have made such great strides in the estimation of the public, as well as in benefits conferred on the citizens of the country. When our work was started, there were few laws for the protection of wild birds and animals, especially those that are beneficial to agriculture and forestry; to-day this condition is entirely changed. Further, a sentiment for the protection of wild life could hardly be said to exist; to-day such a sentiment is widespread and is fast growing, owing to the educational work of the Audubon Societies through the press and by illustrated leaflets. What has been accomplished is a monument to the faithful and intelligent work of a few hundred people scattered throughout the country. To-day. I can point with pride to a strong and thoroughly equipped organization, virile and full of activity and promise for the future outcome of the work of the National and State Audubon Members."

The address then discusses plans of work for the future, and deals, first, with the subject of ways and means, in connection with the work to be accomplished. The income of the Association goes but a short way in meeting the legitimate demands upon it, and an appeal is made for its increase. Then are explained the educational measures employed, which include lectures, leaflets, and the public press. Also the legislative work, which is of the highest importance and entails a considerable outlay of funds, as when an important bill is under consideration, "a representative of the Association must be present at the hearing and speak for or against it." "In the matter of bird legislation, there is no resting-place; the only price of satisfactory bird protection is eternal watching of legislatures, for in an

¹ Bird-Lore, Vol. X, 1908, pp. 277–329, with several half-tone plates.

unguarded moment an amendment may be passed that will undo the work of years." And there are forty-four legislatures to watch!

Reservations, to be effective, must be patrolled by wardens, and whether the refuges are established by the Federal Government or are held under leases by the Association, the necessary wardens have to be supplied by the Association. Hence with the setting aside of each new reservation the responsibilities and expenses of the Association are proportionately increased. "How rapidly this work may be extended," says Mr. Dutcher, "depends entirely upon the public itself. If this appeal falls upon unwilling ears and hearts, our progress will be slow, but if, on the other hand, our plans and suggestions meet with the sympathy and support they deserve, progress will be very rapid." The Secretary's report states that "nine additional reservations have been formed during the past year by President Roosevelt upon the recommendation of President Dutcher"; and that, in all, "there are now twenty-three National Reservations under the care of this Association."

The reports of field agents include a report by Edward Howe Forbush for New England, and by William B. Finley for Oregon and the Northwest Coast region. Mr. Finley gives a detailed account of his and Mr. Bohlman's exploration of the bird life of the lakes of southern Oregon, which is not only important from the view point of bird protection but is of special interest as a sort of census of the water bird colonies of the extensive lakes and marshes of southern Oregon and northern California. Here the plume hunters have remained at work continually, killing thousands of Grebes and other birds. "It is," says Mr. Finley, "a difficult matter to stop shooting in such a vast area that is so profitable to the plume hunter, but we expect to succeed. There are at present six indictments against plume hunters filed in the District Attorney's office at Burns, for shooting Grebes on Malheur Lake." He adds: "To show how little observance has been given to the game laws in southeastern Oregon, it has been the custom for parties to go down to Malheur Lake in the fall when Swan, Snow Geese and other birds are migrating, and kill these birds merely for the feathers, which are sold at so much per pound."

Such facts indicate the necessity for a strong central organization of bird protectors, like the National Association, and how essential it is that greatly increased funds be made available for its work.—J. A. A.

Report of the Chief of the Bureau of Biological Survey for 1908.¹—Dr Merriam's report summarizes briefly the work of the Bureau of Biological Survey for the year ending June 30, 1908. This includes: "(1) Investigation of the economic relations of birds and mammals to agriculture; (2) investigations concerning the geographic distribution of animals and plants with reference to the determination of the life and crop belts of the country; (3) supervision of matters relating to game preservation and protection, and the importation of foreign birds and mammals." Among

¹ From Annual Reports of the U. S. Department of Agriculture, 1908. Pp. 22.

the many important topics recapitulated may be cited the relation of birds to the cotton boll weevil; California birds in relation to the fruit industry; food of wild ducks; food of woodpeckers; mosquito-eating birds; birds in relation to the codling moth; the economic relations of the Grosbeaks; spread of the English Sparrow in southern California; means of attracting birds; geographic distribution; game protection, etc. Respecting the latter we quote a single paragraph: "Difficult problems attach also to the task of preserving the non-game birds of the country. Capture of native birds for millinery purposes and for the cage-bird market is under fairly good control; but questions that press constantly for settlement arise through absorption of breeding haunts to meet the needs of spreading civilization, the great increase in the number of persons who shoot birds, and other agencies of depletion resulting from changed conditions." The measures taken to meet these problems are briefly recounted, as well as those to prevent the importation of undesirable birds and mammals. An attempt is now being made to prevent the spread of the English Sparrow into southern California; also to ascertain the present distribution of the Starling in this country, with a view "to devising means to check further increase of its range and to eradicate the pest, as far as possible, in the territory now occupied." It is of interest to here further note that "During the year the office of Geographic Distribution has made considerable advance in mapping the distribution of American birds and mammals, and in getting its accumulated data into shape for convenient reference and use." Meanwhile the gathering of such information on a broad scale continues, while reports on sections already surveyed are being prepared for publication.—J. A. A.

Mrs. Bailey's 'Handbook of Birds of the Western United States.'¹—The third edition of Mrs. Bailey's 'Handbook' differs from the former editions through the correction of the additional errors discovered, the substitution of many drawings of bird-skins in place of photographs, and a revision of the text under the genus *Astragalinus* to bring it into accord with the rulings of the A. O. U. Committee on Nomenclature. The work is thus not materially changed, this new edition being issued to meet the continued demand for this excellent handbook.—J. A. A.

Richmond's List of Generic Terms proposed for Birds during 1901-1905.²

¹ Handbook of Birds | of the | Western United States | including | the Great Plains, Great Basin, Pacific Slope, and | Lower Rio Grande Valley | By | Florence Merriam Bailey | With thirty-three full-page plates by | Louis Agassiz Fuertes, and over six hundred cuts in the text | Third edition, revised | [Emblem] Boston and New York | Houghton Mifflin Company | The Riverside Press Cambridge.—12mo., pp. xc + 514. \$3.50, net; postpaid, \$3.69.

² Generic Names applied to Birds during the years 1901 to 1905, inclusive, with further Additions to Waterhouse's "Index Generum Avium." By Charles W. Richmond, Assistant Curator, Division of Birds, U. S. National Museum. Proc. U. S. Nat. Mus., Vol. XXXV, pp. 583-655. Published Dec. 16, 1908.

This is a continuation of Dr. Richmond's 'List of Generic Terms proposed for Birds' published in 1902,¹ and includes, besides new names, many heretofore generally overlooked. The new names here recorded for this five-year period number about 200, "with about 350 others of earlier date, the majority of which are not recorded by Waterhouse" in his 'Index Generum Avium,' published in 1889. Of these 350 names, more than one third, or about 125, are marked with an asterisk to indicate that they are *nomina nuda* or else of "undecided status," or "names about the status of which there may be differences of opinion"; such as, for example where the name rests solely on a diagnosis, or on a drawing of structural details (like some of Reichenbach's), or on a vernacular name. This category includes a large part of Billberg's 50 new names (published in 1828), most of Brookes's 40 (published also in 1828), and most of the names (about 50) of Morris, C. T. and N. Wood, and S. D. W. (dating from 1837). It is a pity such worthless lumber could not have remained in oblivion. On the other hand, many of the old names here listed have sufficient basis and are entitled to the recognition required by the law of priority.

As in Dr. Richmond's previous 'List of Generic Terms,' the subject is well handled and the references and results are clearly and satisfactorily presented, the 'List' forming a most valuable supplement to previous indexes to the generic names of birds. The numerous footnotes add valuable comment on many intricate points, and include several changes of names, including names of species as well as of genera. Thus *Aaptus* Richmond, 1902 (= *Aphobus* Cabanis, 1851, preoccupied) is found to be preoccupied and is accordingly changed to *Gnorimopsar*. *Accentor* Bechstein, 1802, becomes *Laiscopus* Gloger, 1842. *Amandava* Blyth, 1836, has priority over *Sporaginus* Cabanis, 1850. *Passerherbulus* Maynard, 1895, has priority over *Ammospiza* Oberholser, 1905. *Carpophagus* Selby, 1835, being preoccupied, gives way to *Muscadivores* Gray, 1855. *Conoponderas* Billberg, 1828, has priority over *Tatare* Lesson, 1831. *Halohippus* Billberg, 1828, has priority over *Rhantistes* Kaup, 1829, both being monotypic with the same type (*Procellaria glacialis* Linn.). *Pogonornis* Gray, 1846, being preoccupied by *Pogonornis* Billberg, 1828, is here renamed *Notiomystis* Richmond. *Tanagra* Linnaeus, dating from 1764 (instead of 1766 as usually cited), has the type here first designated, as follows: "So far as I know the type of *Tanagra* at 1764 is yet to be fixed, and as 'first reviser,' under the rules of the new International Code, I will select *Fringilla violacea* Linnaeus, 1758, as the type. This... will permit us to use *Tanagaridae* for the family, *Tangara* Brisson, for the Callistes, *Euphonia* Desmarest (*Tanagra* Linnaeus, 1764, preoccupied [antedated] by *Tangara* Brisson) for the *Euphonia*s, and *Thraupis* Boie, for the 'true' Tanagers. Those who reject Brisson's names may use *Tanagridae*, *Calospiza*, *Tanagra*, and *Thraupis* for the same groups." This comes about from the fact that *Tanagra* of Linnaeus in 1764 (Mus. Adolphi Friderici) contained only three

¹ See Auk, XIX, July, 1902, p. 307.

pecies, only one of which was as a member of the family of Tanagers, the others being Icterines — one a *Leistes*, the other a *Cassicus*, while the third (and last) is a *Euphonia*.—J. A. A.

Publications Received.—**Bailey**, Florence Merriam. Handbook of Birds of the Western United States. Third edition, revised. Houghton Mifflin Co., 1908. \$3.50, net; postpaid, \$3.69.

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NOTES AND NEWS.

DR. ROBERT MORRIS GIBBS, well known as a Michigan naturalist and ornithologist, died of paralysis at his home in Kalamazoo, September 18, 1908, at the age of 52. His name is familiar to most of the older bird men, as he was an occasional contributor to 'Forest and Stream,' the 'American Field,' the 'Ornithologist and Oölogist,' the 'Oölogist,' and the 'Nidologist' (later the 'Nidologist'), a word originally coined by Dr. Gibbs. His first work of importance was an Annotated List of Michigan Birds, published in Bull. U. S. Geogr. and Geol. Survey of the Territories, Vol. V, No. 3, 1879. He collected a large part of the material for Professor Cook's 'Birds of Michigan,' published by the Michigan Agricultural College in 1893, but the final draft of this bulletin was made entirely by others.

About twenty years ago Dr. Gibbs suffered a stroke of paralysis which

crippled him so completely that during the remainder of his life he was confined to a wheel chair and able to accomplish but very little field work, although he used his pen pretty steadily until the last. Ornithologists are indebted to him for many valuable field notes and critical observations, as well as for his lists of Michigan birds. He also published one or more lists of Michigan reptiles, and did some work on the mammals of the State during his later years. His collections of birds and mammals were purchased many years ago by the Michigan Agricultural College and the University of Michigan.—W. B. B.

THE Fourth Annual Meeting of the National Association of Audubon Societies was held at the American Museum of Natural History, New York City, October 27, 1908. To facilitate the work of the Association several changes were made in the By-Laws, reducing the number of Directors from thirty to eleven, and making six instead of five a quorum. In addition to the Board of Directors, an Advisory Board was established, "consisting of not less than ten nor more than thirty members," to which the Board of Directors may submit any matter for advice. With a large and widely scattered Board of Directors it has been found impossible to secure a satisfactory attendance at meetings; a smaller Board, with a more concentrated residence, seemed to promise greater efficiency in the transaction of business. The following officers were elected for the ensuing year: President, William Dutcher; First Vice-President, Dr. T. S. Palmer; Second Vice-President, Dr. J. A. Allen; Secretary, T. Gilbert Pearson; Treasurer, Dr. Jonathan Dwight, Jr. Upon invitation of Mr. Gifford Pinchot, the following Committee was appointed to coöperate with the National Conservation Commission: Edward Howe Forbush (Chairman), Dr. T. S. Palmer, Frank M. Chapman, T. Gilbert Pearson, William Dutcher. Following the reports of the President, Secretary and Treasurer, an illustrated address was given by Mr. William L. Finley on the work of the plume hunter in Oregon. The work of the Association for the year 1908, as detailed in the report of the President, has already been noticed (*antea*, p. 100).

AN IMPORTANT decision has recently been made by the Supreme Court of the United States respecting the sale in this country of imported game. The decision is that of the Silz Case, which was begun in the courts of Kings County (Brooklyn), New York, in April, 1905. The history of this case is given in full by Dr. T. S. Palmer in 'Circular No. 67' of the Bureau of Biological Survey, issued December 9, 1908, on which the following details are based. "On April 6, 1905, John Hill, proprietor of the Clarendon Hotel in Brooklyn, was arrested for having in possession in close season 24 brace of English Plover and Russian Grouse. These birds had been purchased from August Silz, one of the largest importers of foreign game in New York City, Silz at once became a party to the case and on the next day was arrested by Henry Hesterberg, the sheriff of the county,

for having in possession on March 30, 1905, in Kings County, N. Y., one Golden Plover and one Blackcock from Russia. . . . This game was said to have been captured in the open season, purchased in London, and imported into the United States in accordance with the tariff law and regulations." On April 7, Silz obtained a writ of habeas corpus from the supreme court in Brooklyn, and on June 16 the writ was quashed and the relator was remanded to the custody of the sheriff. He appealed the case, and the appeal was sustained by the appellate division of the supreme court. On February 26, 1907, the court of appeals reversed this decision, and Silz was again remanded to the custody of the sheriff of Kings County. On July 27, the final order quashing and dismissing the writ of habeas corpus was issued. In 1907 the case was appealed to the Supreme Court of the United States on writ of error. The case was argued October 15, 1908, and the final decision was rendered on November 2, 1908, affirming the judgment of the court of appeals of New York. The opinion of the court was rendered by Mr. Justice Day.

Dr. Palmer cites the opinion in full, and further gives a history of the question of the right of a State to regulate possession and sale of game taken outside its boundaries. He also comments on the importance of the decision in its relation to game protection in the United States, stating: "The present decision in the Silz case disposes of the question whether a State has the right to regulate possession and sale of game taken outside its boundaries — a question which has been before the State courts in one phase or another for more than thirty-five years, and which is here presented in an extreme form, namely, regulation of the sale of game imported from foreign countries." This decision also, he further states, "directly affects dealers in game, importers, and many persons engaged in the millinery trade, and is also of unusual interest to sportsmen and friends of game protection."

Evidently if a State can regulate the importation and sale of game, it can also regulate, or prohibit, the importation and sale of foreign birds for millinery purposes, and thus aid in checking the immense slaughter of birds in foreign countries for such use.

DR. RUDOLPH M. ANDERSON, formerly of Blee Military Academy, Macon, Mo., is now engaged in zoölogical exploration in Arctic America, in the interest of the American Museum of Natural History. The expedition, in charge of Mr. Vilhjalmr Stefánsson, left New York in April, 1908, reaching the Great Slave Lake region in June, and later descended the Mackenzie River to the Arctic coast, where the explorers will pass the winter. The expedition is expected to occupy two years, Mr. Stefánsson giving special attention to the anthropology and Dr. Anderson to the zoölogy of portions of Arctic America thus far practically unexplored. The first shipment of specimens reached the Museum in October, and though not large, contained a number of birds and mammals of much interest, including the nest of the Bohemian Waxwing described in the present number of this journal (see pp. 10-12) by Dr. Anderson.

DR. D. G. ELLIOT has recently returned to New York from a prolonged trip around the world, during which considerable time was spent in India, China, Japan, and Hawaii. Dr. Elliot is engaged in the preparation of a monograph of the Primates, a group of mammals at present in greatest need of thorough revision, and his visit to Europe was for the purpose of studying the material in foreign museums, including especially the types of previous authors.

MAJOR EDGAR A. MEARNs, Medical Corps, U. S. Army, who has twice in recent years been detailed to service in the Philippines, has recently been placed on the retired list with the rank of Lieutenant Colonel. President Roosevelt having invited him to accompany him on his hunting trip to Africa in April next, Dr. Mearns's field of experience as a naturalist will be further widened by a year's work in the interior of Africa, where he will have the good wishes of all his fellow members of the A. O. U.

ARRANGEMENTS have been made for the celebration of the one hundredth anniversary of the birth of Charles Darwin by the New York Academy of Sciences on February 12 next at the American Museum of Natural History. The memorial exercises will include the presentation to the Museum of a bust of Darwin, the presentation to be made by Charles F. Cox, President of the Academy, and the acceptance will be by Henry F. Osborn, President of the Museum. Other addresses will be on 'Darwin's work in Botany,' by Professor N. L. Britton; 'Darwin's work in Zoölogy,' by Professor H. C. Bumpus; 'Darwin's work in Geology,' by Professor J. J. Stevenson.

A PROMINENT feature of 'Bird-Lore' for the last five years has been the series of colored plates of North American birds. The first series of twenty-four was devoted to the Wood Warblers (Mniotiltidæ), and was reissued later, with appropriate text, as 'The Warblers of North America.' The Warbler plates were followed by colored plates of the Thrushes, and these by colored plates of the Flycatchers. The Flycatcher series will be completed in the next issue (Jan.-Feb., 1909) of the magazine, and will be followed by colored plates of the Vireos, to be completed in 1909. It is now announced that the Vireo series will be followed by plates of the Sparrows, which, we are sure, will also meet with a hearty welcome on the part of 'Bird-Lore' readers, and later serve as the basis of other such admirable monographs as the now well-known 'Warbler Book.'

THE prospectus of a new illustrated monthly magazine, to be known as 'Travel and Exploration,' has recently been issued by Witherby and Company, London. The magazine will be devoted to illustrated articles dealing with travel in all its aspects, of which a prominent feature will be the personal narratives of explorers of wild and little known regions, including Polar expeditions, both North and South, as well as other out of the way regions. The list of contributors presented includes the names of several widely known explorers. The first number is announced to appear January 1, 1909.

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pp. lxxxv. 50 cents.

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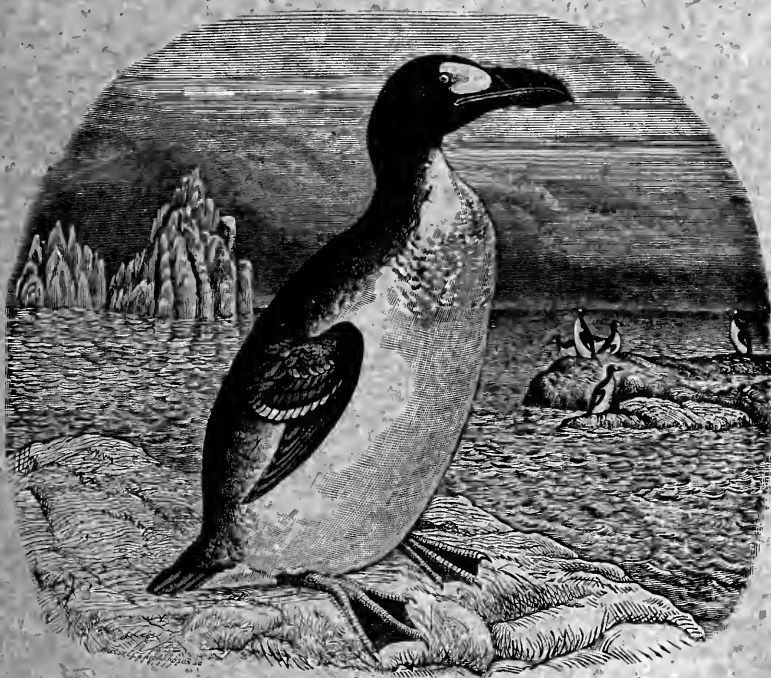
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No. 2

THE POSITION OF BIRDS' FEET IN FLIGHT.¹

BY CHARLES W. TOWNSEND, M. D.

THE FLIGHT of birds is generally so rapid that our impression as to the position of their feet is often a confused or conventional one, and not always correct, unless our attention has been particularly called to this point. This is shown, for example, in the taxidermist's soaring dove, whose feet are carefully drawn up in front, an erroneous position, as we shall see. In the case of many birds, however, it is not difficult on close observation to see clearly the feet, and to be sure of their position. In others, long study is necessary before the point is clear. The subject has interested me for some years, and I have accumulated a certain number of notes from my own observations and from literature, both of which are briefly summed up in the following paper. All studies of this sort are interesting in themselves, and may be of help in determining relationships.

Birds may be divided into two classes: I, those that habitually carry their feet stretched out behind during flight, and, II, those that carry them drawn up in front.

I. Birds that carry the feet behind.

As far as I know all water-birds habitually carry their feet behind in flight, but a few observations on the different orders may be of interest.

¹ Read at the Annual Meeting of the American Ornithologist Union, November 18, 1908.

PYGOPODES. As the Grebes are practically tail-less, their feet, extended to the rear, are very noticeable, while the feet of the Loon appear like a rudder behind their cutter-built bodies. In fact, it is very probable that the feet in these birds are used, like a long tail, as a rudder.

In the Auk family some have the feet brilliantly colored, so that they are noticeable, as is the case with the Puffin and Black Guillemot, where the feet are bright red. In the case of the Razor-billed Auk the tail is so long that the feet are concealed from above, while in the Murre, they extend slightly beyond the tail. Capt. G. E. H. Barrett-Hamilton (3), speaking of the Auks, says: "Here again the legs are still of considerable assistance to the flying bird, since they may be separated so as to increase the width of the tail; they may be placed both together at one side, or they may be allowed to partially drop and catch the wind with an effect possibly somewhat like that of the string of a kite."

LONGIPENNES. Although I have observed the backward position of the feet in numerous members of the Gull order, the most satisfactory bird to watch, and one with which I have had many opportunities, is the Herring Gull. These opportunities are greatest where the birds are protected and fearless, as is the case in the basin of the Charles River and in Boston Harbor. The legs are habitually extended behind under the tail, the feet generally close together but often apart. In quick turns, the feet are generally dropped pressed together, suggesting their use as a centerboard, for, as in a centerboard boat, quick turns with the board up are impossible, — with it down these turns become easy.

Several observers, namely Barrett-Hamilton (3), Meade-Waldo (15), and Anthony (1), mention the fact that Gulls of various species occasionally fly with one or both legs drawn up in front, more or less completely concealed in the feathers of the breast. Anthony infers that they do this to keep the feet warm, but I have seen this habit when the temperature was 40° Far., and Barrett-Hamilton (3) has observed it in mid-summer. I have observed this habit in the Glaucous and in the Great Black-backed Gull as well as in the Herring Gull. A Herring Gull I was watching had both feet held up in front, showing plainly against its white breast. While I was looking it drew down one foot and extended it behind in the usual manner, flying about in this way for several minutes. Another

bird, while sailing about with both feet behind, dropt them, shook them, and then inserted both in the feathers of the breast. Sometimes the feet carried forward show plainly, at other times they are buried all but the toes which appear as dark nobbs, and again they are entirely concealed in the feathers of the breast, so that the bird appears to be destitute of feet. Birds with one foot concealed in front and one carried behind appear to have only one foot. I have noticed the habit both in the immature and in the adult Gulls.

I once saw a Common Tern bring one foot forward and scratch its head during flight — a surprising performance.

TUBINARES. I have never had the opportunity to observe the Albatross family but Barrett-Hamilton (4), in speaking of the flight of an Albatross with its feet stretched out backwards, says: "The legs are frequently moved as if to act as a rudder or to lessen the bird's pace — for example, when descending."

«The Shearwaters usually skim so close to the water that their short feet are concealed, and I have not noted them during flight.

Of the Petrels, I have observed the feet extending beyond the tail in Wilson's Petrel, and have discovered that this is an excellent field mark to distinguish this species from Leach's Petrel, where the short feet are concealed below the tail, not even extending beyond the fork (19). This fact has also been noted by Riley (16).

STEGANOPODES. The Gannets, Cormorants, Pelicans, Tropic and Man-o'-War Birds all carry their feet behind. Many photographs by Chapman, Job and others show this point.

ANSERES. All the Ducks, Geese and Swans carry their feet behind, a point that is easily observed in some species. When they alight in the water, the feet are dropped and carried forward wide apart to break their fall. Meade-Waldo (15) states that he once saw a Mallard carry its feet in front during flight, just as has already been described in the case of the Gulls.

ODONTOGLOSSÆ. Chapman's photographs of Flamingos show the legs held behind in flight.

HERODIONES. The dexterity with which the Herons manage their ungainly legs, stretching them out behind in flight, is familiar to all. I once saw a Great Blue Heron attacked in mid-air from the rear by a screaming Tern. The Heron was so startled that it dropt for a moment its long legs, and stretched out and around its snake-like neck. That Storks, Ibises and Spoonbills carry

the legs behind has been affirmed by several observers, and the fact is shown in numerous published photographs.

PALUDICOLÆ. Our common Sora and Virginia Rails in flying short distances generally let their legs dangle straight down, but if the birds get well under way the legs are drawn up behind. The same is true of the American Coot or Fulica.

In the case of Cranes, I have had no experience, but Meade-Waldo (15) states that the legs are carried behind.

LIMICOLÆ. I have made numerous observations on many species of shore-birds, and all carry their legs behind in flight. This is most easily seen in the long-legged waders, but can be observed even in those with short legs.

Among the land birds both classes may be found but I shall continue with those that belong in Class I,—those that carry the feet behind.

GALLINÆ. The Pheasants, Grouse, Bob-whites, etc., all carry their feet behind when well under way, but, as it is probable that they all draw them up in front in starting, or flying only a few feet, their action has often been misunderstood. I have not been able to see the feet in the rapid flight of our Ruffed Grouse and Bob-white, but in the introduced Ring Pheasant, I once watched a flock of young birds in flight whose only partly grown tails did not conceal the long legs of the birds that extended backwards. Meade-Waldo (14) says that all game birds when launched on the wing carry their legs behind. Holdsworth (13) says: "The Pheasant and the Capercaillie both rise with their feet in front, and when well on the wing turn them backwards." Hartert (11) states that all game birds carry the legs behind, and quotes Ogilvie Grant, Walter Rothschild and J. G. Millais in support of this assertion. Barrett-Hamilton (3) also confirms this.

COLUMBÆ. The familiar Pigeon of our streets, the descendant of the Rock Dove of Europe, affords an excellent opportunity for the study of the disposition of the feet during flight, yet I have found that even excellent observers are apt to see incorrectly until they have carefully studied the subject. The management of the feet is as in the Gallinæ. On rising from the ground, the Pigeon draws up its feet in front, but, as it gathers headway, the feet are drawn back and extended under the lower tail coverts. In this

position it soars or executes any flight of more than a few yards. When it flies but a short distance it does not have time, or it does not take the trouble, to draw up its feet behind, but carries them in front to be ready to drop them when it alights. In quick turns I have seen them drop their feet a short distance from the tail, so that daylight could be seen between, as has already been described in the case of the Gulls. One I was watching dropped its legs so that they hung straight down for a few seconds, and were then extended behind again. In alighting the feet are thrown forward, generally at the last moment.

RAPTORES. About the position of the feet in the Birds of Prey there has been from time to time considerable discussion, although the matter was apparently settled in the pages of 'The Ibis' in 1894 and 1895, when the Editor, after reviewing an article on the subject by Hartert (11), asked whether British ornithologists agreed with the author. Hartert (9) stated that he was convinced that all birds of prey carried their legs behind in flight, and the same habit had been recorded the year before by Ziemer (20). This observation was confirmed by Sclater (17), Barrett-Hamilton (2), Meade-Waldo (14) and Cordeaux (6), each having noted this habit in one or more species. Meade-Waldo had also observed it in trained Falcons. Hartert (12), in a later article on the subject, quoted E. C. Stuart Baker and Ogilvie Grant as sustaining him against the popular idea that the feet are carried in front. He also states that Kestrels when about to strike carry their legs forward and extended, and this is doubtless true of other Hawks. Barrett-Hamilton (3) says that while the normal position of the feet of Kites is backwards, still he "feels sure that Kites, like Gulls, can use either the backward or the forward position."

When the new U. S. twenty dollar gold piece appeared in 1907 with the design by St. Gaudens of an Eagle in flight, its legs behind, a protest went up. A writer in the Boston 'Transcript' said: "Whoever saw an eagle in flight with its legs trailing behind it like a heron?," thus voicing the popular idea that the legs are carried in front.

My own observations on this point in Birds of Prey are limited to the Osprey, Sparrow, Marsh, Rough-legged and Red-shouldered Hawks. At Bristol, R. I., the Ospreys are semi-domesticated,

for they build their nests on tall poles, erected for their convenience in barn-yards, and allow inspection at close range. Under these circumstances one can easily see that the legs are extended behind in flight,—and carried close under the tail. On one occasion I watched two Red-shouldered Hawks soaring together. In one the feet were stretched close under the tail, while the other had dropped them slightly, so that daylight was visible between the tail and the feet. A Sparrow Hawk that flew by me at Ipswich within 30 yards, showed the feet trailing behind, with a distinct gap between the tail and the legs, very much as in the St. Gaudens design.

The only observation I have made in the Owl family, was in the case of a Great Horned Owl that I watched flying about in one of Mr. John E. Thayer's large cages. In this case the legs were drawn to the rear and not forward, and the faster the bird flew the more the legs were extended behind. Meade-Waldo (15) states that the legs of Owls are carried behind, and Finley (7) has published an interesting photograph of a Barn Owl in full flight, where the legs are plainly extended behind. Mr. F. H. Kennard tells me that some Barred Owls that he kept always extended their feet behind in flight.

PSITTACI. Finn (8) has observed the feet carried behind in the Indian Parrot, *Palæornis torquatus*. Beebe (5) says of the Finsch Amazon Parrots in flight: "Each little foot clinched tightly close to the tail feathers."

COCCYGES. Finn (8) by careful and long observations has determined that both Cuckoos and Kingfishers carry the feet behind. He observed birds in the wild state and also when confined in rooms for this purpose.

II. *Birds that carry the feet drawn up in front.*

In our review of the orders of North American birds, all have been considered but these, namely: Pici, Macrochires and Passeres.

PICI. The observations of Finn (8) are the only ones that I can find in this order. He has observed a Woodpecker carrying the feet in front in flight. I have often endeavored to determine this point in the Flicker, but have been as yet unable to do so.

MACROCHIRES. To determine the position of the feet during flight in the Goatsuckers, Swifts and Hummingbirds is a difficult problem, owing to the smallness of the feet and the habits of flight in this order, and I have no observations of my own to record. Finley has taken a photograph of a Hummingbird hovering about a flower in which the feet are in front. A photograph by Chapman (5¹) shows the same state of things. It is possible, however, that in full flight the feet may be extended behind. This order may therefore be put in the undetermined list.

PASSERES. The great order of perching birds alone remains, and it would seem natural that they should carry the feet in front as they fly from place to place, so as to be ready to seize their perch. As far as I know, this is the case. Barrett-Hamilton (3) gives a list of several passerine birds in whom he has observed the forward position of the feet, including the English Blackbird, Raven, Rook, and others of the Crow family. The Crow is our largest common Passerine bird, but its black color of plumage and feet makes it difficult to observe on the point in question. A Crow, in rising on the wing, often lets its feet hang at first, and then draws them up in front in an exceedingly leisurely manner. When well under way the feet are close against the breast, and are held there, I am inclined to believe, even in long flights, for I have several times observed Crows at Ipswich from a point in the dunes or beach where I could follow their flight for a long distance, and, as they passed me, their feet were always in front. I have notes of a Crow migrating along the beach one April day, flying slowly, and showing plainly the feet held in front, but dropped slightly so that daylight could be seen between them and the breast. This I have seen in other cases also. The feet are often held so close to the breast that only the clenched toes can be seen, while in other cases the feet seem to be entirely buried in the feathers. That excellent observer, Edmund Selous (18), gives a drawing of flying Ravens in which the feet are drawn up in front.

Other passerine birds, where I have been able to see the feet when the bird was in full flight, are: Red-winged Blackbird, Bronzed Grackle, English Sparrow, Eave, Tree and Barn Swallows, and Robin. In all of these the feet were carried in front.

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ORNITHOLOGICAL MISCELLANY FROM AUDUBON WARDENS.¹

BY B. S. BOWDISH.

It is my purpose to give here a few of the notes of interest gathered from letters and reports of wardens. Such notes are some of the incidental results of the warden system of the National Association of Audubon Societies.

BROWN PELICANS.—Brown Pelicans, on Pelican Island, Florida, started nesting nearly a month ahead of the usual time, or the first

¹ A paper presented to the American Ornithologists' Union, Cambridge, Mass. November 19, 1908.

week in November. At one time in January there were about 1000 occupied nests. A severe storm and high tide struck them in February; the birds first hatched were just able to fly; the rest were destroyed, the water making a clean sweep over the island. Of 2500 not over 600 escaped. Later about 75 nests were built but for some unknown reason they abandoned the island without hatching.—*Paul Krogel*, Pelican Island Reservation, Florida, Sept. 9, 1907.

This has been the most successful season the birds have had since the island was made a reservation. A good many birds died in February through cold and exposure during stormy weather, otherwise the total would have been from six to eight hundred larger. The second brood came through very well; they can all fly with the exception of about 30. There are about 1000 birds on the island now, young and old. The second brood numbers between six and seven hundred birds, most of which are still around the island. This season puts the island ahead of what it used to be years ago, as there were certainly more birds than I have ever seen on it before. There will probably be birds on the island until nesting starts again, unless a storm drives them off.—*Paul Krogel*, Pelican Island Reservation, Florida, Sept. 1, 1908.

ROSEATE SPOONBILL.—Five years ago there was a fine flock of Roseate Spoonbills or "Pink Curlews" that used and did their feeding in the northeast end of Turtle Bay; only 18 are left now of the flock, and they have for the past two seasons done their feeding on my home island in the fall and winter months. Hunters and tourists killed them, and there are but few left on the Gulf coast of Florida.—*Columbus G. McLeod*, Sunset Island, Florida, 1907.

AMERICAN WHITE PELICAN.—A small flock of White Pelicans fed during the winter and early spring months in the northeast end of Gasparilla Sound. There were about 50, but they are decreasing from shooting for wings, feathers and for mounting. Nearly all the birds except pelicans and cormorants go to the main land to feed.—*Columbus G. McLeod*, Sunset Island, Florida, 1907.

BLACK SKIMMERS.—Black Skimmers began nesting three weeks earlier than in 1906.—*Asa M. Pillsbury, Jr.*, Passage and Indian Keys Reservations, Florida, 1907.

There was heavy weather on the 19th of April which destroyed

about three quarters of the nests and eggs of the Skimmers, also some of the young birds. There was left after the storm enough nests to produce say 6000 young ones. All the young of all broods are now able to take care of themselves.—*Adam Thibodeaux*, East Timbalier Island Reservation, Louisiana, July 8, 1908.

Young Skimmers are disturbed if people visit the Reservation. They lie quiet upon the first approach of a person, but after a time they will start away and run into the water, and when it is rough on the beach the little things are beaten down and drowned.—*Asa N. Pillsbury, Jr.*, Passage and Indian Keys Reservations, Florida, Oct. 1, 1908.

ROYAL TERN.—The storm tide which occurred June 14 destroyed nests with eggs, about 30,000 in number, including about 15,000 Royal Terns' eggs, and as the breeding places were low islands the Royal Terns did not re-build thereon, but a few of them went to Battledore Island.—*Wm. M. Sprinkle*, Breton Island Reservation, Louisiana, 1907.

TERNS.—(Under this head are included Common, Arctic and Roseate, which are not readily distinguished by the wardens; also Least Terns). First Terns seen May 20; plenty May 25. The terns did not arrive as early as usual this year, on account of the cold. On July 14 there were plenty of eggs and young. People have remarked that the terns were very plenty this year. The fishermen in this vicinity like very much to have the terns here; they tell me they are as good as a compass, and by them they locate the fish. I have not heard of a single violation this year.—*Geo E. Cushman*, Bluff and Stratton Islands, Maine, 1907.

The terns did not seem to be as many as usual this year, and I soon found that a portion of the colony had joined the one on Fisher's Island, two miles across the bay. A few eggs were trodden by sheep. The birds left this vicinity about the middle of July, somewhat earlier than usual.—*Henry M. Cuskley*, Libby Island, Maine, 1907.

The terns died off badly on account of the cold and lack of food at time of hatching.—*James E. Hall*, Matinicus Rock, Maine, 1907.

The spring was backward, cold and rainy, and most birds were late in nesting. There were as many if not more eggs laid as in

any year since I began to take note of them. Terns are noticeably increasing.—*F. N. Johnson*, Swanns Island, Maine, 1907.

The medrics (terns) came about the usual time and the nests soon had from one to four eggs and in one case five. The nests were very plenty and one had to be very careful not to step on the eggs, lying upon the sand, rocks, grass, and even upon the solid ledges, in some cases rolling down hill. After hatching, the long, cold rains killed some of the young, many birds being found lying about the island.—*Willis Snow*, Metinic Island, Maine, 1907.

There is a herring weir on the north side of the island and the terns come there in large flocks and sit on the weir stakes and binders and get a great many small herring out of the weir. It does not seem to annoy the parties who own the weir. There is a ledge near there where the birds sit at low water and they seem very tame. Power boats can run very near them, and they don't seem at all alarmed, I think they are much more numerous and also gaining the good will of the public.—*Howard T. Ball*, Deer Isle, Maine, 1907.

About 3000 young terns were hatched, of which about 200 died, leaving 2800 reared.—*Emanuel Nelson*, Woods Hole, Mass., 1907.

The terns were later than usual; many young died and many eggs failed to hatch owing to cold and late season.—*Henry O. Rackett*, Gardiner's Island, New York, Sept. 13, 1907.

Least Terns are about extinct here; otherwise, except the Gull-billed Terns, all species are much more abundant within a radius of 20 miles from Smith's Island north than they were three years ago. On a small lump of about one acre, 140 yards from this station, 17 pairs of Common Terns nested this season and laid three eggs each, from the 51 eggs rearing 43 young, but I do not think the other colonies will average as well, as they were not so near to the station, and I could not keep the Crows away, and they eat many eggs and also some young.—*J. R. Andrews*, Cobb's Island, Va., 1907.

We had a heavy rain followed by a second one a day or two afterward, about the second day of August, and I found on the 12th that the young terns had perished by the score; and there seemed to be hundreds of dead young ones, all or nearly all about the same age, and quite a few eggs, dry and unhatched.—*Willis Snow*, Metinic Green Island, Maine, August 27, 1908.

For some reason unknown to me the terns vacated Channel Rock where there were a goodly number last year, and until the middle of July there were no birds to speak of, and only one nest, on Sloop Island Ledge. Since that time they have come to Sloop Island Ledge and built from 20 to 25 nests and raised their young. Since the breeding season was over I have frequently seen large numbers of birds rise from there but none on Channel Rock. I can discover no reason for their leaving Channel Rock; I can not see that they have been disturbed by any one. I think by appearances that they like Sloop Island Ledge and will return there another year. They have increased considerably in numbers since I first became warden, but they have not been as plenty this year as last.—*Howard T. Ball*, Eagle, Maine, Sept. 7, 1908.

In June, at Green Island, there were lots of terns breeding, also on Stratton Island, this year. I don't think the terns have been breeding on Green Island before for years. On Bluff Island the cows in pasture had stepped on some young terns and killed them.—*George E. Cushman*, Bluff and Stratton Islands, Maine, Sept. 1, 1908.

Terns arrived here May 18. The first egg was found June 1; the first young July 1. About 500 young were hatched at the new colony on Foster's Island. Most of the terns have left here and gone further up the bay in pursuit of a small fish called brit on which they feed.—*Henry M. Cuskley*, Bucks Harbor, Maine, Sept. 4, 1908.

The terns have all gone from here, have not seen any since September 14. The approximate number of old birds was about the same as last year but there was an increase of about 150 in young.—*Emanuel Nelson*, Woods Hole, Massachusetts, Sept. 22, 1908.

HERRING GULL.—Some few young died as soon as out of the shell, owing to the extreme cold. Only one old gull died this season.—*Osmond Cummings*, Cone Island, Maine, 1907.

Gulls are getting very tame; they are known to follow the fishermen and seize their trauls for the bait; they even come about the huts when the fishermen are baiting their trauls.—*Dennis Driscoll*, Gotts Island, Maine, 1907.

All Herring Gulls breed on Pulpit Rock and Camp Island, and

terns on Freeman's Rock and Egg Rock. This has been a very good year for all wild birds; no heavy sea to disturb their nests. Very few young died and there has been no eggging to my knowledge. The Indians that have given us some trouble in years past, on Camp Island and Pulpit Rock, have not landed on the islands this year.— *O. B. Hall*, Great Wass Island, Maine, Sept. 14, 1907.

There were about 1400 Herring Gulls, raising about the same number of young. The increase over last year was about 200.— *Fred. E. Small*, Cross Island, Maine, 1907.

It has seemed to me that the proportion of nests with eggs that did not hatch has been larger this year than last, I think owing to the extremely cold spring, but apparently the birds found food more abundant, and they seemed to grow faster and were more hardy. I have found a smaller number of crippled young and old birds this year than ever before. We were visited by an eagle in July and he killed several young gulls before I could drive him off. I have found four gulls that came home to die, being wounded at sea. Aside from young killed by the eagle the greatest number lost were killed by old gulls when one bird's young tried to take the food from another adult.

The gulls came to their nesting grounds on No Mans Land the last of March. The first nest was seen April 15. Young gulls commenced to leave the nesting home August 6. On September 8 all young birds were able to care for themselves.— *Mark Young*, Matinicus Island, Maine, 1907.

Not as many eggs were laid by the gulls this season as heretofore; reason, too much ice on the island this spring. Many of the eggs laid did not hatch on account of cold weather.— *John H. Malone*, Isle Royale, Michigan, 1907.

Have noticed that crows eat gulls' eggs and kill and eat young gulls when small.— *Frank F. Witte*, Huron Island, Michigan, 1907.

There was a very satisfactory increase in the number of nests this year, but the final outcome was very disappointing. The Crows destroyed many of the eggs, and a flock of 32 sheep on my island and 20 more on the adjoining one were a source of much annoyance to the gulls. The weather also was very bad all through the season and the fierce gales and heavy seas killed many of the young birds. After the storm I would find young birds almost as

large as their parents and able to fly strongly, dead among the stones, having been blown or washed in and killed. Unlike other years, the birds seem reluctant to leave, and many are still lingering around their nesting places. They have also exhibited much less fear this year, and on our home island have become quite tame, although they seem to know the difference between ourselves and strangers.—*George C. Jones*, Four Brothers Islands, New York, Sept. 15, 1907.

The gulls arrived here the last of April; the first egg was found May 26; first young, July 1. *Henry M. Cuskley*, Bucks Harbor, Maine, Sept. 4, 1908.

It is very difficult to determine the number of gulls for they have increased wonderfully. We find them in all the harbors and inlets during the day, but at night they return to the Duck Islands. They are doing splendidly and have not been molested at all.—*Dennis Driscoll*, Gotts Island, Maine, September 5, 1908.

There has been abundance of herring all along the coast and the old gulls have been scattered all along the shore. They are very plenty, but they have not laid as many eggs this year as last.—*O. B. Hall*, Jonesport, Maine, Sept. 9, 1908.

The old birds are going fast. The young gulls are in good condition.—*Wm. F. Stanley*, McKinley, Maine, Sept. 8, 1908.

There were more eggs of each species laid this spring than were hatched, owing to the cold spring.—*John H. Malone*, Isle Royal Light Station, Michigan, Sept. 3, 1908.

I do not notice any increase in the number of gulls around this place although a great many were bred here; there do not seem to be any more now than there were this spring, and I can not account for it except that they scatter and go all over. Of course, the hawks and owls kill some, but I have found the remains of only four that I thought were killed in that way.—*John A. McDonald*, Passage Island, Michigan, September 1, 1908.

Arriving at the islands on May 2, several nests were found containing one or two eggs, but none at that time with the full set of three. From then until the middle of the month the nests were built very rapidly, and on May 28 the first young bird was hatched. On this date a careful count showed 327 eggs, which number was increased later by 21, found after the falling water permitted a

more thorough search of the shores. The per cent. of young hatched was very high, as I found not more than 12 eggs unhatched. The general exodus of the birds took place during the last week of August, nearly all being gone by September 1. I estimate that fully 75 eggs were destroyed by Crows. This loss occurred on only one island, which being heavily wooded afforded a place of concealment for the Crows from which they could steal upon the nests while the old birds were away. I found one nest where all three of the eggs had been broken and the contents not yet eaten. Others I found with only two small holes through which the contents had evidently been sucked. I was unable to find any evidence that they destroyed any young birds. Including the eggs destroyed, I estimate the number of eggs laid as 450, which was a very considerable increase over last year. The four islands, containing each about four acres, afford an admirable breeding ground, which should, in time, become a very large colony.—*B. G. Boone*, Four Brothers Islands, N. Y., Nov. 7, 1908.

It is a pleasure for me to report that this has been a very good year for the birds breeding on Old Man Island. The island contains only about 7 acres, which is small for the number of birds breeding there.—*Fred E. Small*, Bucks Harbor, Maine, April 31, 1908.

LEACH'S PETREL.—The Mother Cary's Chickens' nests are in evidence, but of course one can not tell what is within unless the birds are disturbed. A number of years ago I saw a nest dug out, and a very sleepy looking, small, hook-billed bird was found.—*Willis Snow*, Metinic Island, Maine, 1907.

I have previously made mention of the terrible slaughter of petrels by minks upon Western Egg Rock. These minks have caused the petrels to emigrate to Eastern Egg Rock, and the evidence of the slaughter is quite apparent to any one who might visit this place. The gulls have been forced to seek a home in other localities. As soon as the law permits me I shall begin killing the minks in the hope that they may be wholly exterminated before the birds begin to breed again.—*E. E. Bailey*, New Harbor, Maine, August 29, 1908.

Very many petrels have stopped around the island, but none have nested this season.—*Osmond Cummings*, Cone Island, Maine, 1907.

I have not given an account of the Storm Petrel (Leach's), for the reason that it is so difficult to determine the number, as they are abroad only at night, but judging from the number of burrows where they make their nests there are not as many as formerly.—*Dennis Driscoll*, Gotts Island, Maine, September 5, 1908.

There are thousands of the Stormy (Leach's) Petrels here at this writing.—*Wm. F. Stanley*, McKinley, Maine, Sept. 8, 1908.

LAUGHING GULL.—High tides in June destroyed all the eggs, but the gulls rebuilt and there was a large increase over last year.—*R. S. Ludlam*, Stone Harbor, N. J., 1907. (See note of G. D. Hitchens, in the 'General Notes,' below.)

It is 15 miles from this station to the main land; there is a marsh in the middle of this bay ten to twelve miles long and three fourths of a mile wide. On July 11, 1907, while standing on that marsh, looking north and south, a distance, I think, of at least two miles each way, Laughing Gulls and terns were as thick as you ever saw blackbirds, as far as the eye could see, and there were a few Willets. The gulls and terns are equally thick all over the marsh, and as plenty as I have ever known them. I have, with two other men, years ago, taken 1000 eggs a day. It would take 20 days to hunt that marsh over, and when it was hunted over we could begin again and find as many more from the 10th of June to the 25th of July. There is a sandbar across this inlet, about four acres in extent, and rising about eight feet above high tide. Three weeks ago there were over 1000 young Black Skimmers, not yet able to fly; to-day there are over 400 still too young to fly; these birds have been hatching since July 25. There are lots of them flying now, of the first breeding.—*J. E. Johnson*, Hog Island, Virginia, Sept. 16, 1907.

EIDER DUCK.—This has been one of the best seasons for the birds since I have been warden; I do not think they have been disturbed in any way this year. There were about 30 Eider Ducks, raising about 40 young.—*Fred E. Small*, Cross Island, Maine, 1907. (See note by Osmond Cummings under 'General Notes'.)

When I was appointed warden there were two Eider Ducks breeding on the Old Man Island, and at present I have 60. If there were a law to abolish all spring shooting it would be a matter of a short time when we would have a large colony of ducks on this coast.—*Fred. E. Small*, Bucks Harbor, Maine, August 31, 1908.

GENERAL NOTES.— Sandpeeps are here in large numbers, as in preceding years; also plovers of different species. About 1500 Shags (Cormorants) fly in over the island in the morning and out at night. Black Ducks make it a stopping place but none nest; also Eider or Sea Ducks abound in very large numbers.— *Osmond Cummings*, Cone Island, Maine, 1907.

Do you think the mere handling of foliage concealing a nest of young birds will leave a scent upon the leaves or ferns that will attract prowling enemies to the nest and prove the death of the young birds? Last year, deep in the woods, I found a wren's nest near a brook. Brushing aside the ferns to see the nest I found four young, helpless birds. Next day the nest was vacant, not even the mother bird being seen. Did a mink find the nest of young birds and gobble them up, attracted to the place by the scent of my hand upon the foliage? Again, this last June I found a ground-bird's nest near my camp, containing four young birds, entirely helpless. Next day these birds were gone! What happened to them? Did a prowling skunk smell the scent of my hand on the foliage about the nest, investigate, and then find and devour the baby birds? If so, bird lovers must be careful not to handle the foliage about nests, lest by doing so they bring death to the nestlings. I am puzzled to explain these instances in any other way, and I find upon inquiry numbers of my fellow guides have had similar experiences.— *Edgar E. Harlow*, Kineo, Moosehead Lake, Maine, 1907.

There were 15 swallows' nests under the lantern deck of the tower. Last year a Robin built its nest within 20 feet of our 10-inch steam-whistle fog-signal and held the fort.— *Wm. F. Stanley*, Great Duck Island, Maine, 1907.

A large number of duck eggs was spoiled by the cold, late spring, and the second laying was smaller than the first.— *Alfred Eastgate*, Stump Lake Reservation, North Dakota, 1907.

Increase of gulls and terns is hampered by the taking of eggs up to the 20th of June. The slow increase of Willets and Wilson's Plover is due to their being shot after July. The reason of the slow increase of Oystercatchers is that they are early layers and most of the first hatching die from the effects of the cold, wet spring weather.— *G. D. Hitchens*, Smiths Island, Virginia, 1907.

While camping on the Penobscot River recently I saw a Sparrow Hawk pursuing a sandpiper. They came flying down the river, the hawk soon coming close to its intended victim. Suddenly, just as its pursuer swooped down upon it, the sandpiper made a quick turn in the air and dove into the river entirely out of sight. The outwitted hawk at once sheered off into the forest, and a few seconds later the sandpiper rose to the surface of the water fully 20 feet from where it had entered it, and escaped unharmed up the river. I call that a brave little fellow, resourceful and clear-headed almost to the point of reason.—*Edgar E. Harlow*, Kineo, Maine, September 3, 1908.

The birds in my district are all in flocks getting ready to take their southern trip; and I have counted many little flocks and I have not seen a flock, that I could count correctly, but what had more young ones in it than old ones, both gulls and terns. I think this was the best hatch-out of young gulls and terns I have had in years.—*J. R. Andrews*, Oyster, Va., Sept. 3, 1908.

The birds were so numerous this season that it was almost impossible to make any estimate; on the Middle Ground or Little Island Key, a beach of about 100 feet square, the nests were so thick that there was no room at all to land. The same conditions prevailed at Rock Key. These two places do not have beaches at all times; they are rocks covered with water, but some years the sand washes up and makes a sand beach, and if no storm occurs during the season the birds have a good breeding, but if the sand washes away then the eggs are lost, and they have to come here on Sand Key and begin their breeding over again. This was a very successful season; no storm of any account occurred, no eggs were taken or destroyed, and the largest number of birds breed on these places. I visited a few of the islands and found several birds breeding on Man Key, Woman Key, and Ballast Key; on these islands cranes (herons), curlews (ibises), cormorants and pelicans breed. I think it would take all the time of two wardens to protect the birds on this new reservation.—*Chas. G. Johnson*, Key West Reservation, Florida, Sept. 3, 1908.

The small number of plume birds that I had last breeding season, and that I was so proud of, have not returned this season to nest on Sunset Island. I suppose they must have nested somewhere

in the interior and long since been shot. However, I saw a few lately on the breeding ground. I do hope that the flock of Pink Curlews (Roseate Spoonbills) have escaped this summer and will pay me a visit now soon. It is not yet time for the flock of White Pelicans to put in their appearance.—*Columbus G. McLeod*, Placida, DeSota County, Florida, Oct. 1, 1908.

On most parts of the islands, on almost every two square feet was a nest containing 5 or 6 eggs (Laughing Gulls, Brown Pelicans, Black Skimmers, Blue and White Herons, Black-crowned Night Herons).—*Joseph F. Bilos*, Tern Islands Reservation, Louisiana, Sept. 8, 1908.

I think that public sentiment is growing against the killing of the birds; when we first began to look after them the killing of gulls was taken as a matter of course; men out gunning would often bring down a gull just to try their skill; now it is a rare thing that one is killed. People are beginning to feel above it. I am strongly in favor of the abolition of all spring shooting; the birds are gradually diminishing.—*F. N. Johnson*, Swans Island, Maine, August 28, 1908.

Eight years ago I came to this station. At that time there were only two Puffins, specimens having been taken a few years previous to the number of four or five. Since that time the birds had increased to the number of three or four pairs which nested here in 1906. I think specimens must have been taken last year, as I have seen only two of them this summer. The noise from motor boats may have caused them to abandon this locality, however.—*M. E. Tolman*, Matinicus, Maine, Sept. 3, 1908.

All birds except Common Terns are on the increase. There were 14 young Canada Geese raised on the islands this year. Can not give any estimate on ducks, as all sloughs dried up, driving all the young to the big lake.—*Alfred Eastgate*, Stump Lake Reservation, North Dakota, Sept. 6, 1908.

There has been a good increase in all birds this year, as there has been no high tide during the breeding season, and no one disturbed the eggs after the law was out. There are more birds this fall than there has been since I have been warden. Willets are getting quite thick in the fall.—*George D. Hitchens*, Brighton, Virginia, Sept. 1, 1908.

About the last part of May there was a storm and high tides that destroyed many of the Mud Hens' (Clapper Rails) eggs. They laid again, May 25 to 28; high tides drowned many young Marsh Hens. The Black-headed Gull (Laughing Gull) and Strikers (Terns) are as plentiful as last season. The Flood Gulls (Black Skimmers) are on the increase, but the August storm, I think, has drowned many of that bird, as they principally nest on an outer island called Pig Island. I notice this storm has washed that island almost flat, and there are many young ones not yet able to fly.—*J. E. Johnson*, Hog Island, Virginia, August 29, 1908.

I think that the following birds that formerly nested here in numbers are now nesting further south: Willets, Sea-crows (Oystercatchers?) and Black-headed Gulls (Laughing Gulls). I hear that 20 miles down the bay they are spoken of as being unusually abundant. The only bird here that seems more abundant than usual is the Mud Hen (Clapper Rail); there has not been so much eggging done for the last two or three years. Willets, Sea-crows and Black-headed Gulls never did nest as plentifully on this beach as on others further south, possibly because it is so low, and they like higher beaches where there is an abundance of fine shells. About every six or seven years we have a high tide that seems to sweep the shells off the beach.—*Howard F. Jones*, Assateague Beach, Virginia, August 29, 1908.

The increase in Marsh Hens, (Clapper Rails) has been very large. It is the opinion of all with whom I have talked that more young of all species have been raised this season than ever before.—*J. A. D. Savage*, Wachapreague, Virginia, Sept. 8, 1908.

The Legislature, repealing the law preventing the shooting of Robin Snipe, was, I think, responsible for the Gulls (Laughing) failing to nest near my station this season, owing to the wholesale shooting of them by residents.—*L. F. Taylor*, Flander Island and Metomkin Beach, Virginia, Sept. 3, 1908.

NOTES ON THE SUMMER BIRDS OF NORTHERN
GEORGIA.

BY ARTHUR H. HOWELL.

THE literature of Georgia ornithology is not extensive. The only complete list of the birds of the State is a nominal list of 269 species, published in a German magazine in 1855 by Alexander Gerhardt on the authority of one White.¹ In this paper, the author gives interesting and valuable notes on the life histories of 43 species, drawn from his personal observations during a residence of several years in northern Georgia. These notes furnish, in the case of several birds, the only published records of the breeding of the species in the State.² Only two local lists from Georgia, both of which are very incomplete, have thus far appeared.³ Scattering notes relating to Georgia birds are likewise few in number and most of them refer to the southern part or to the region close to Atlanta. With the exception of Gerhardt's paper, practically nothing concerning the northern part of the State has been published, and while many northern-breeding birds have been supposed to inhabit the mountains, which are continuous with the ranges in North Carolina, definite knowledge as to the species summering there and the southern limits of their distribution has been lacking.

The field work of the Biological Survey during the summer of 1908 included an examination of the fauna and flora of the Southern States to determine the boundaries of the life zones. In connection with this investigation I visited northern Georgia in July and spent about three weeks collecting and studying the birds, mammals, and plants of the higher mountains. Three localities were visited, as follows: Tate, Pickens County, and Grassy Mountain (3290 feet), about six miles northeast of Tate, July 4-6; Ellijay, Gilmer

¹ Naumannia, V, 1855, pp. 382-384.

² This paper appeared in three installments, as follows: Naumannia, V, 1855, pp. 380-397, 458-469; VI, 1856, pp. 1-18.

³ 'Birds of Kirkwood, De Kalb County, Georgia,' by Robert Windsor Smith, in Wilson Bulletin, X, pp. 49-59, 1903, listing 126 species; 'Memoranda of a Collection of Eggs from Georgia,' by H. B. Bailey, in Bull. Nutt. Orn. Club, VIII, pp. 37-43, 1883, listing 104 species, which list would be extremely valuable if exact localities had been given.

County, and Rich Mountain (4081 feet), about ten miles northeast of Ellijay, July 7-8; Young Harris, Towns County, and Brasstown Bald (4768 feet), about five miles southeast of Young Harris, July 10-20.

Brasstown Bald ¹ is the highest mountain in Georgia ² and is part of a high ridge marking the boundary line between Union and Towns counties. Continuing southward, this ridge turns west and forms the boundary between Union and Lumpkin counties.

Practically all of extreme northeastern Georgia (including Gilmer, Fannin, Union, Towns, and Rabun counties) is occupied by a series of high ridges which form the southern end of the Blue Ridge system. In this region are found numbers of peaks over 4000 feet in altitude and several over 4500 feet. Rich Mountain in eastern Gilmer County, and Grassy Mountain in northern Pickens County are parts of the same system, directly continuous with the higher ridges in Fannin and Union counties. Grassy Mountain is the most southern peak reaching an altitude of 3000 feet. South of there the peaks are much lower and mainly isolated. The valleys are mostly narrow, and range in altitude from 1100 feet at Tate to 1900 feet at Young Harris.

The greater part of northern Georgia is included in the Upper Austral Zone (Carolinian area) which covers all mountains less than 3500 feet in altitude, and reaches approximately to that altitude on the higher peaks. Transition Zone (Alleghenian area) is found on the peaks and ridges above 3500 feet and descends somewhat lower than that on cold slopes and in shaded ravines. No pure Canadian Zone exists in this region, although a few Canadian species of mammals and plants occur in a very restricted area at the summit of Brasstown Bald. No spruces or firs are found on these mountains.

On the lower slopes oaks (numerous species) are the prevailing

¹ Designated as 'Mt. Etna' on the Rand-McNally Map of Georgia ('Mt. Enota' on old sheets of the Geological Survey), and is doubtless the mountain called 'Fodder Bald' by Guyot. It is known simply as 'The Bald' to the residents of the region.

² Sitting Bull Mountain (5046 feet), listed under Georgia in Gannett's 'Dictionary of Altitudes,' is higher than Brasstown Bald, but as mapped by the U. S. Geological Survey is in North Carolina. This mountain, I am informed by the U. S. Coast and Geodetic Survey, is one of the southern peaks of the Nantahala Mountains (Lat. 35°, Long. 83° 31'). It is the mountain called 'Little Bald' (5030 feet) on the Dahlonga Quadrangle of the U. S. Geological Survey.

trees, with which are associated hickories, chestnuts, gums (*Nyssa sylvatica*) tulip trees (*Liriodendron*) and other characteristic Carolinian forms. Pines of two species (*Pinus rigida* and *P. virginiana*) are found in scattering clumps, and hemlocks (*Tsuga canadensis*) grow along the streams. Among the characteristic birds found in this area may be mentioned *Bæolophus bicolor*, *Thryothorus ludovicianus*, *Icteria virens*, *Seiurus motacilla*, *Piranga rubra*, *Empidonax virescens*, and *Cardinalis cardinalis*.

At about 3500 feet altitude most of the Carolinian species disappear and a number of characteristic Alleghenian forms are first seen. On the upper slopes the prevailing trees are white oak and chestnut, with which are found hickories, locust (*Robinia*), red maple, striped maple*¹ (*Acer pennsylvanicum*), cherry-birch* (*Betula lenta*), chestnut oak (*Quercus prinus*), laurel (*Kalmia*), rhododendron (*R. maximum*), flame azalea* (*A. lutea*), purple-flowering raspberry* (*Rubacer odoratum*), small-flowered hellebore* (*Veratrum parviflorum*), etc. The characteristic birds of this area are *Junco h. carolinensis*, *Lanivireo s. alticola*, *Dendroica cærulescens*, *Dendroica virens* and *Dendroica blackburniæ*.

Near the summit of Brasstown Bald the soil is thin and rocky and the tree growth much stunted. On the shaded northeast slope dense thickets of rhododendron and laurel cover the cliffs and rough rock piles and furnish suitable conditions for the presence of Canadian forms. Here were found the southern yellow birch (*Betula alleghanensis*), mountain maple †² (*Acer spicatum*), Carolina rhododendron (*R. catawbiense*), the Wilson Thrush (*Hylocichla fuscescens*), a mountain salamander † (*Plethodon shermani*), the Smoky Shrew † (*Sorex fumeus*), and the Cloudland White-footed Mouse † (*Peromyscus nubiterræ*). The following list of 76 species, based almost entirely on the birds observed or collected on this trip, though obviously incomplete, is offered as a contribution to our knowledge of the avifauna of this little known area. Thirteen species are here first recorded as occurring in the State during the breeding season: *Corvus corax principalis*,³ *Coturniculus*

¹ Species starred are characteristically Alleghenian.

² Species marked with a dagger are characteristic of Canadian Zone.

³ An indefinite record for Georgia is found in John Abbott's letter to George Ord (1814), in which he says, "The Raven only frequents the back inland Counties of Georgia & can inform you nothing more of it." (Auk, XXIII, 1906, p. 367.)

savannarum australis, *Junco hyemalis carolinensis*, *Zamelodia ludoviciana*, *Spiza americana*, *Lanivireo solitarius alticola*, *Mniotilta varia*, *Dendroica aestiva*, *D. caerulescens cairnsi*, *D. blackburniae*, *D. virens*, *Seiurus aurocapillus*, and *Hylocichla fuscescens*.

In the list which follows, records unaccompanied by specific localities apply to all the localities visited.

Butorides virescens. GREEN HERON.—An immature specimen was taken at Young Harris, July 11.

Philohela minor. WOODCOCK.—One was flushed, July 12, from an open oak knoll in the valley at Young Harris.

Colinus virginianus. BOB-WHITE.—Common at Young Harris and on lower slopes of Brasstown Bald; rather uncommon at Tate and Ellijay.

Bonasa umbellus. RUFFED GROUSE.—Breeds sparingly on Brasstown Bald. My assistant got within 150 yards of one that was drumming near the summit July 17, and another hunter saw a female on top of an open ridge at about 4000 feet, acting as if she had young. In the region about Ellijay, grouse were reported by several people to occur in small numbers, and a few are said to be found in the rough country north of Grassy Mountain. This is close to their present southern limit. In former years they were much more common in this region. There is a specimen of this bird from Georgia (without specific locality) in the U. S. National Museum, taken by Prof. Leconte in 1847.

Meleagris gallopavo silvestris. WILD TURKEY.—Occurs on Brasstown Bald in small numbers. Three were shot in one day last winter on the mountain by a hunter. In the Rich Mountain region they are reported to be very scarce.

Zenaidura macroura carolinensis. MOURNING DOVE.—A few noted at Tate and at Young Harris.

Cathartes aura septentrionalis. TURKEY VULTURE.—Fairly common throughout north Georgia; seen at all altitudes on Brasstown Bald.

Buteo borealis. RED-TAILED HAWK.—Not common; one seen on Grassy Mountain.

Otus asio. SCREECH OWL.—Scarce; one flushed from a thicket of pines and oaks at Tate.

Bubo virginianus. GREAT HORNED OWL.—Occurs sparingly on Brasstown Bald.

Coccyzus americanus.

Coccyzus erythrophthalmus.—Cuckoos were fairly common in this region, but I was unable to determine the species. Both are recorded as breeding in north Georgia by Gerhardt.¹

Ceryle alcyon. BELTED KINGFISHER.—One noted at Young Harris.

¹ Naumannia, VI, 1856, pp. 12-13.

Dryobates villosus auduboni. SOUTHERN HAIRY WOODPECKER.—Occurs in small numbers throughout the mountains; seen at Ellijay and Grassy Mountain.

Dryobates pubescens. DOWNY WOODPECKER.—Not common; seen at Tate and near the summit of Rich Mountain.

Phloeotomus pileatus.—PILEATED WOODPECKER.—Found sparingly throughout the mountains; noted at Brasstown Bald and Grassy Mountain.

Melanerpes erythrocephalus. RED-HEADED WOODPECKER.—Scarce; one seen at 3500 feet on Rich Mountain.

Centurus carolinus. RED-BELLIED WOODPECKER.—One seen in heavy timber on lower slope of Rich Mountain.

Colaptes auratus. FLICKER.—Not common; seen at Ellijay, Tate, and Young Harris.

Anstroctomus vociferus. WHIPPOORWILL.—One heard singing, July 11, at Young Harris. Recorded as breeding by Gerhardt.¹

Chordeiles virginianus. NIGHTHAWK.—Not common; a few noted at Ellijay and at Young Harris.

Chætura pelagica. CHIMNEY SWIFT.—Generally common throughout the region. On Brasstown Bald they were constantly coursing over the tops of the highest peaks.

Trochilus colubris. RUBY-THROATED HUMMINGBIRD.—A few noted in the valleys.

Tyrannus tyrannus. KINGBIRD.—One seen at Ellijay and several at Young Harris.

Myiarchus crinitus. CRESTED FLYCATCHER.—Rather uncommon; seen at Tate and on Brasstown Bald up to 4000 feet.

Sayornis phœbe. PHŒBE.—Several seen on Brasstown Bald up to 3000 feet. A nesting record is given by Gerhardt (under the name *Muscicapula olivacea*!).²

Myiochanes virens. WOOD PEWEE.—Common in the valleys, and on the mountains to 4000 feet.

Empidonax virescens. GREEN-CRESTED FLYCATCHER.—Common in the valleys and on the lower slopes of the mountains.

Cyanocitta cristata. BLUE JAY.—Fairly common on Brasstown Bald, where several were seen in the rhododendron thickets at the summit. A few noted at Tate.

Corvus corax principalis. NORTHERN RAVEN.—Ravens are reported to occur in small numbers on Brasstown Bald. My guide told me he knew of a nest where young were raised in the spring of 1908.

Corvus brachyrhynchos. AMERICAN CROW.—Occurs in small numbers at Young Harris. One noted at Tate.

Icterus galbula. BALTIMORE ORIOLE.—I saw no orioles in this region,

¹ Naumannia, VI, 1856, p. 3.

² Naumannia, V, 1855, p. 387.

but was shown a nest in a tree at Young Harris which closely resembled nests of this species. It is recorded as a breeder by Gerhardt.¹

Astragalinus tristis. AMERICAN GOLDFINCH.—Common in small flocks; seen up to 4500 feet on Brasstown Bald.

Coturniculus savannarum australis. GRASSHOPPER SPARROW.—Several noted and one taken at Young Harris.

Spizella passerina. CHIPPING SPARROW.—Common in the valleys and on the mountains to 4500 feet.

Spizella pusilla. FIELD SPARROW.—Common in the valleys and on the lower slopes of the mountains.

Junco hyemalis carolinensis. CAROLINA JUNCO.—Common on Brasstown Bald and Rich Mountain above 3500 feet altitude. The latter locality probably marks their southern limit quite closely, since they were not found on Grassy Mountain, slightly farther south. Both adults and young were collected.

Peucæa æstivalis bachmani. BACHMAN SPARROW.—One was seen at Tate in dry oak woods; evidently rare in this region. Has been recorded as breeding at East Point, near Atlanta.² A specimen was shot at Rising Fawn, Georgia, Aug. 21, 1885, by J. T. Park and identified by Dr. C. Hart Merriam.

Pipilo erythrophthalmus. TOWHEE.—Common at Young Harris and on Brasstown Bald, where it ranges to the very summit. At Ellijay it was scarce, and only two or three pairs were noted in the valleys. The only one seen farther south was on Grassy Mountain at about 3000 feet. Specimens were taken at Ellijay and Young Harris.

Smith, in his list of birds of Kirkwood, states that this species is not known to breed there, but in a report sent to the Biological Survey he mentions seeing a single bird there on June 25, 1903. The Towhee breeds on Lookout Mountain in northwest Georgia, as indicated by a report received by the Biological Survey from J. T. Park, who found the species in July, 1884, on the mountain near Rising Fawn. Gerhardt³ records this species as nesting in bushes at a height of 4 to 5 feet.

Cardinalis cardinalis. CARDINAL.—Observed rather sparingly in the valleys.

Zamelodia ludoviciana. ROSE-BREASTED GROSBEAK.—One adult male was seen on July 13 in a grove of oaks at Young Harris. They probably breed in small numbers in that region.

Passerina cyanea. INDIGO BUNTING.—Common in the valleys and on the mountains to 4000 feet.

Spiza americana. BLACK-THROATED BUNTING.—This bird probably does not breed in Georgia at the present time; it seems desirable, however, to record an instance of its nesting in the State in 1883, furnished by J. T.

¹ Naumannia, VI, 1856, p. 1.

² W. J. Mills, Wilson Bull., XII, 1905, p. 116.

³ Naumannia, V, 1855, p. 465.

Park, an intelligent observer, then stationed at Rising Fawn. In a letter to Prof. W. W. Cooke, dated July 21, 1885, he states that a pair of Black-throated Buntings nested in a clover patch near his house in that year, and adds that the species was never observed there except during that season.

Piranga erythromelas. SCARLET TANAGER.—Not common; one was heard singing on Grassy Mountain, a male was seen on Rich Mountain, and several were noted on Brasstown Bald—in each case at an altitude of about 2500 feet. Gerhardt records this species as a breeder in north Georgia.¹

Piranga rubra. SUMMER TANAGER.—Fairly common in the valleys; one was taken at 2600 feet altitude on Brasstown Bald.

Progne subis. PURPLE MARTIN.—Common at Young Harris, but not seen elsewhere.

Vireosylva olivacea. RED-EYED VIREO.—Rather uncommon; seen at Tate and Ellijay, and on Brasstown Bald up to 4400 feet altitude.

Lanivireo flavifrons. YELLOW-THROATED VIREO.—Observed in small numbers in the valleys and up to 3000 feet on the mountains.

Lanivireo solitarius alticola. MOUNTAIN SOLITARY VIREO.—Common on Brasstown Bald between 3500 and 4500 feet and on Rich Mountain above 3700 feet. Both young and adult birds were taken. The young individuals were singing in subdued tones.

Vireo noveboracensis. WHITE-EYED VIREO.—Two heard singing at Ellijay; not noted elsewhere.

Mniotilta varia. BLACK-AND-WHITE WARBLER.—Common in the valleys and on the mountains to 4500 feet. This species is omitted from Smith's list of birds of Kirkwood, but reports in the Biological Survey from several observers indicate that it breeds at Kirkwood and Atlanta.

Helminthophila chrysoptera. GOLDEN-WINGED WARBLER.—A male of this species was seen, but not secured, July 11, at 2500 feet on Brasstown Bald. J. T. Park, in a letter to Prof. W. W. Cooke, reports seeing a pair of these birds feeding young at Rising Fawn, Georgia, June 24, 1885. The male parent and one young bird were shot.

Dendroica aestiva. YELLOW WARBLER.—Fairly common at Tate and at Young Harris.²

Dendroica caerulescens cairnsi. CAIRNS WARBLER.—Fairly common on Brasstown Bald and Rich Mountain above 3500 feet altitude. One female was seen near the base of Rich Mountain (1600 feet). Both adults and young were taken, the latter in full fall plumage.

Dendroica blackburniae. BLACKBURNIAN WARBLER.—Two specimens were taken at 4300 feet on Brasstown Bald and an immature individual at 3500 feet on Rich Mountain.

Dendroica virens. BLACK-THROATED GREEN WARBLER.—Two immature specimens were taken at the summit of Rich Mountain (4000 feet) and

¹ Naumannia, V, 1855, pp. 462-463.

² Smith, in his list of birds of Kirkwood says of it: "rare; not known to breed."

one at 4300 feet on Brasstown Bald. Evidently breeds throughout these mountains. J. T. Park in a letter to Prof. W. W. Cooke reports them common on Lookout Mountain, near Rising Fawn, Georgia, in June, 1885. A female in breeding condition was shot by him there, and identified by Dr. C. Hart Merriam.

Dendroica vigorsii. PINE WARBLER.—A few noted at Tate and a little company of four or five (a family of young and their parents) at 3000 feet on Brasstown Bald.

Seiurus aurocapillus. OVENBIRD.—A few seen on Rich Mountain between 3000 and 4000 feet; occurs sparingly on Brasstown Bald from 2500 to 4000 feet. Smith, in his list of birds of Kirkwood gives this species as a rare migrant. J. T. Park found the Ovenbird breeding on Lookout Mountain, near Rising Fawn, Georgia, in June, 1885.

Seiurus motacilla. LOUISIANA WATER-THRUSH.—Fairly common along streams on the lower slopes of the mountains (up to 2200 feet) and in the valleys.

Oporornis formosa. KENTUCKY WARBLER.—Fairly common in the valleys; seen up to 2200 feet on Brasstown Bald.

Geothlypis trichas trichas. MARYLAND YELLOWTHROAT.—Common in the valleys; singing. Several specimens taken, both adults and young.

Icteria virens. YELLOW-BREASTED CHAT.—Common in the valleys, seen up to 2500 feet.

Wilsonia citrina. HOODED WARBLER.—A pair observed in a laurel thicket at Tate.

Mimus polyglottos. MOCKINGBIRD.—One seen at Ellijay; not noted elsewhere.

Dumetella carolinensis. CATBIRD.—Common in the valleys, and on Brasstown Bald to 4300 feet.

Toxostoma rufum. BROWN THRASHER.—Seen in small numbers in the valleys.

Thryothorus ludovicianus. CAROLINA WREN.—Common in the valleys, and on the mountains to 4000 feet.

Thryomanes bewickii. BEWICK WREN.—A few seen at Young Harris, and one on Rich Mountain at 3500 feet. A breeding record is given by Gerhardt (under the name *Troglodytes americanus*).¹

Sitta carolinensis. WHITE-BREASTED NUTHATCH.—Scarce; one taken at 4000 feet on Brasstown Bald and several seen at the same altitude on Rich Mountain.

Bæolophus bicolor. TUFTED TITMOUSE.—Fairly common up to 4000 feet.

Penthestes carolinensis. CAROLINA CHICKADEE.—Observed in small numbers in the valleys and up to 4400 feet on the mountains.

Poliophtila cærulea. BLUE-GRAY GNATCATCHER.—A few seen at Tate.

Hylocichla mustelina. WOOD THRUSH.—Common in the valleys and up to 4000 feet on the mountains.

¹ Naumannia, V, 1855, pp. 461-462.

***Hylocichla fuscescens*.** WILSON THRUSH.—A few pairs breed on the summit of Brasstown Bald, where they are confined to the dense rhododendron thickets on the cool slopes. One was secured July 16, and on the following day several were heard calling and singing faintly.

***Planesticus migratorius achrusterus*.** CAROLINIAN ROBIN.—Occurs sparingly on Brasstown Bald and in the surrounding valleys. An adult and a young bird were taken at 4500 feet. The robin is mentioned as a breeder by Gerhardt.¹

***Sialia sialis*.** BLUEBIRD.—Fairly common; seen up to 4000 feet on Rich Mountain.

THE TAGGING OF WILD BIRDS AS A MEANS OF STUDY- ING THEIR MOVEMENTS.²

BY LEON J. COLE.

It is needless in introducing this subject to dwell upon the so-called mysteries of migration. To call the facts of migration mysterious is merely to say that we do not understand them, for when we do come to understand them, though they may still remain marvellous, they can no longer be mysterious. That migration will nevertheless still probably remain a phenomenon to be wondered at is because it is, in all likelihood, of a nature widely different from anything in the ordinary experience of mankind. If man possesses any such homing sense, it is only in the most rudimentary and undeveloped condition. And it is probably for this very reason, this element of mystery, that man has from earliest time taken a lively interest in the question of the migration of birds.

But how much nearer are we to a real solution of the problem of migration than we were a hundred or two hundred years ago? Much data has been accumulated, many details have been learned as to where birds go and to a certain extent by what routes, and many poorly grounded theories have been overturned and left behind. But still the goal is ahead. For although the coming

¹ Naumannia, V, 1855, pp. 390-391.

² Read before the American Ornithologist's Union, Cambridge, Mass., November 18, 1908.

of the birds in the spring and their departure in the fall are among the most apparent of natural phenomena about us, and must be noticed by everyone, it is quite another matter when it comes to the details of their movements.

Most of the knowledge of the migrations of birds which has been gleaned up to the present time is of their *mass* movements; scarcely anything is known of what becomes of an individual bird after its departure in the fall from its summer home, or, I might even say, after it has reared its young. It is truly wonderful that birds can wing their way from the region where they breed to a far distant land, and then, with the return of proper conditions, find their way back again to the same region. But how much more wonderful if they come back to the very locality which they left the year before! And how little exact knowledge we have of their ability to do this! It is the purpose of the present paper to outline a plan by which it is hoped that much data of a definite kind can be secured, not only as to the great migrations of birds, but regarding their minor movements as well. Furthermore, it is believed that light may be shed on many subsidiary problems.

The fundamental basis of the plan is a simple one, and one which is not new at this time. It is, briefly, the attaching of identifiable tags or bands upon birds, together with directions so that they may be returned if again found. It may be of interest to those who are not already familiar with the fact to know that probably the first person in this country to try this method was no less than Audubon himself. In his 'Birds of America,'¹ after describing in a delightful way his intimacy with a nest of Phœbes, or, as he calls them, "Pewee Flycatchers," he says: "I attached light threads to their legs: these they invariably removed, either with their bills, or with the assistance of their parents. I renewed them, however, until I found the little fellows habituated to them; and at last, when they were about to leave the nest, I fixed a light silver thread to the leg of each, loose enough not to hurt the part, but so fastened that no exertions of theirs could remove it." His birds left duly in the fall, but he adds: "At the season when the Pewee returns to Pennsylvania, I had the satisfaction to observe

¹ Audubon, John James. *Birds of America*, New York and Philadelphia, 1840, Vol. I, p. 227.

those of the cave, in and about it. There again, in the very same nest, two broods were raised. I found several Pewees' nests at some distance up the Creek, particularly under a bridge, and several others in the adjoining meadows, attached to the inner parts of sheds erected for the protection of hay and grain. Having caught several of these birds on the nest, I had the pleasure of finding that two of them had the little ring on the leg."

In 1901,¹ the writer, unaware at that time of Audubon's experiment, suggested that much might be learned of the movements of birds by a system of tagging, if a suitable method could be devised. No definite steps were taken at that time, however, to carry out the plan.

Some two or three years later Mr. P. A. Taverner of Detroit, Mich., announced through 'The Auk'² that he proposed to attach small aluminum bands to the tarsi of young birds, in the hope that some of them might later fall into the hands of ornithologists and the records be returned to him. On his band was stamped the direction: "Notify The Auk, N. Y.," together with a serial number for identification of the individual band. Mr. Taverner writes me that comparatively few birds have been banded, and of these but a single record has returned to date. This was of a Flicker tagged by Mr. Chas. Kirkpatrick at Keota, Keokuk Co., Iowa, May 29, 1905.³ On the following Christmas day this bird was taken by Mr. J. E. Roos at Many, Sabine Co., Louisiana. During the present year the capture has been reported⁴ of two ducks, a Canvasback and a Redhead, both wearing bands marked with the initials "T. J. O. D." These were taken in New Jersey, within a week or two of each other, in the fall of 1907.

Up to the present time it has not been learned, so far as I am aware, who placed the bands upon these birds. Unless this person is found these last records can have no especial value, but they nevertheless help to emphasize the fact that a certain proportion

¹ Cole, Leon J. Suggestions for a method of studying the migrations of birds. 3d Rept. Mich. Acad. Sci., 1901, pp. 67-70, 1902.

² Auk, Vol. XXI, p. 410, July, 1904.

³ Taverner, P. A. Tagging Migrants. Auk, Vol. XXIII, p. 232, April, 1906.

⁴ Oldys, Henry. Capture of a tagged Canvasback Duck. Auk, Vol. XXV, No. 1, p. 80, Jan., 1908.

Woodruff, E. Seymour. Another Capture of a Tagged Duck. Auk, Vol. XXV, No. 2, p. 216, April, 1908.

of returns may be expected from this sort of work. The use of tags by Dr. Watson¹ to study the homing instinct of Noddy and Sooty Terns at the Tortugas, illustrates the way in which the method may be applied experimentally.

Now as to the sort of results that may be expected from this method of investigation: Not only will it aid in the study of the general migration of a species, but by giving us records of the movements of individual birds, will assist us in analyzing the factors connected with migration in detail. A moderate number of successful "returns" should help in settling such questions as: Are the residents of a locality, or the migrants going further on, the first to arrive in the spring? Do the residents leave before the northern contingent arrives in the fall, or are they the last to go? Do males, females and young travel together, or do one or another go ahead? What is the exact route taken from any locality, and is the same route travelled each year? Furthermore it must be borne in mind that the migration problem is probably but a special phase of the homing problem, and that such questions as whether birds commonly return to the same locality to breed, and whether the young return to the locality in which they were reared, are very pertinent to its solution. I should like to emphasize further the importance of the bearing of the homing instinct, both in birds and in other animals, were there time. I can only express it, however, as my firm belief that a comparative study (observational combined with experimental when possible) of such phenomena as the annual migrations of the fur seals, and of bats, and of many fishes, as well as of the homing of animals in general (toads, ants, bees, and in fact all animals which return to a definite place) is going to be of the greatest value in understanding the "mysteries" of the migration of birds, where the instinct appears to be developed in its highest form.

Answers to certain of the questions stated above have already been found, but most of them depend upon a knowledge of the *movements of individual birds*, and to ascertain these we must have some means of identifying the individual. This is the purpose served by the numbered bands.

¹ Watson, John B. 'The Behavior of Noddy and Sooty Terns.' Publication 103, Carnegie Inst. Wash., Paper VII, pp. 187-225, pl. i-xi, March, 1909.

There are several ways in which the banding may be carried on, but banding the young before they leave the nest is probably the most feasible. This can, of course, be done only with those birds which attain practically their full growth before they attempt flight. In these birds the tarsus is, as a rule, about as large when the fledglings leave the nest as it ever becomes; there is no danger, therefore, that the bands will ever become too tight. If one is inclined to doubt this one should recall that this is the method of recording individuals universally employed by breeders of pigeons and canaries, which once banded, carry the bands for life. In the case of chickens, turkeys, and similar fowls, it is necessary either to replace the bands by larger ones as the birds grow, or else to open them out.

Still another problem which might be attacked in this way is the geographical extension of certain species. What better way, for example, of studying the dispersal of the Starling, which is gradually extending its territory about New York and in Southern New England? Do the old birds leave the places where they were reared and seek habitation elsewhere, or are the young the pioneers? The length of time required to attain adult plumage, and many similar questions would also receive light.

It is not the purpose of the plan systematically to shoot birds in order to recover the bands, nor to encourage the same, but fate sooner or later brings many birds into man's hands. However deplorable it may be, many of our birds (such as Robins and Bobolinks) are shot when they go South in the fall, and while such a condition exists advantage may as well be taken of it.

Directions for the return of the band are stamped upon it. Probably almost anyone finding a bird bearing a tag with a definite address would know what was desired of him, but possibly it may be advisable to offer a small reward to the finder as an additional stimulus. A certain amount of advertising in sporting and similar journals might aid as well.

In other cases it may be possible, as Audubon did, to catch the birds upon the nest and examine them without harm. Furthermore (as Mr. Taverner has suggested to me in a letter), anyone in a suitable locality could trap small birds, band them and release them. This continued systematically through successive seasons

and migration periods could hardly fail to yield valuable results. If a bird previously banded were trapped, the record could be made and the bird again released.

Birds which nest in large colonies, such as the gulls, terns, herons, etc., offer especial advantages for banding and making subsequent observations, and excellent work can be done by anyone who has an opportunity to carry on the work at one of their breeding places.

Finally, as to the scheme of coöperation which is proposed. Last winter the New Haven Bird Club decided to undertake the banding of birds upon a small local scale. A committee was appointed for the purpose of organizing the work, bands were secured, and a plan of records drawn up. The plan is very simple. Upon the top half of a card approximately 5×8 inches in size, is a printed blank form for recording the data of banding, number of band, species of bird, locality, date, and similar facts. On the lower half is a similar form for recording the data in connection with the return of the band, in case it ever comes back. Small booklets containing perforated detachable slips bearing the same form as the upper part of the card are supplied to those who propose to do banding, and when a bird is banded the data are recorded in this book. In the fall the books and all the surplus bands are called in, and the records are then transferred to the permanent cards. Since the numbers on the cards corresponding to those of the bands are arranged consecutively, the record for any band can be turned to directly. A separate index of species is all that is needed to make the system complete.

As to the bands themselves, it was the idea of the Committee at first to use closed or seamless bands whenever possible, and to use open bands only in the case of adult birds. The bands are of aluminum, and are stamped "Box Z, Yale Sta., New Haven, Conn.," in addition to the number. For several practical reasons it will probably be better, as Mr. Taverner has done, to use long open bands, which can be clipped off to make them the proper size, and it is also probable that the "return" address used by him will be adopted.

It was found that the number of birds tagged this year was rather disappointingly small, and it seemed desirable to enlist the help, when possible, of persons outside the Club who were in a position

to help. Further discussion with ornithologists from other sections resulted in a determination to make the plans of much wider scope. Now if the work is to be done generally, it seems greatly to be desired that only one kind of band be used, and to avoid confusion in the numbers, that all bands be distributed and records kept by a central organization. With this in view, the Committee asked for an extension of powers, which now enable it to push the work as seems best, to invite the coöperation of anyone who can help, and furthermore gives it jurisdiction over the records, thus placing them in the hands of those who do the work. The Committee as appointed by the Club consists of Dr. Louis B. Bishop, Mr. Clifford H. Pangburn, and the writer.

Upon its part, the Committee has agreed to be no further expense to the Club, since it has determined to throw itself for support and assistance in carrying on the work entirely upon the generosity and coöperation of such persons as are interested. Among others, Mr. Taverner has generously offered his hearty coöperation, agreeing to act as an advisory member of the Committee, and has volunteered to turn all his bands and records over to the central depot. Similar support has already been offered by others. It is intended now to prepare a large number of bands for the coming season, together with directions for using them. It is hoped to secure a number of interested persons in different sections of the country who will coöperate with the Committee, and act as local distributing agents for bands.¹ It will be their business to attend to the distribution of bands and blank recording forms to any in their locality who are willing to aid in tagging; and at the close of the season to call in the records and unused bands, and to forward the records for transference to the permanent cards.

If the present paper shall have aroused any interest in this plan of attacking the problems of migration, and similar little-understood phenomena, it will have accomplished its purpose, and the Committee will be very glad to correspond with any who are willing to coöperate in the work.²

¹ A number of well-known ornithologists have already agreed to act in this capacity.

² Address Dr. Leon J. Cole, Yale University, New Haven, Conn.

A LIST OF THE BIRDS OF WESTERN SOUTH DAKOTA.

BY STEPHEN SARGENT VISHER.

THE list is based upon the following sources of information: (1) The birds observed while sent out by the Geological and Natural History Survey of South Dakota to the Black Hills (August 1 to 24, 1908) and to the Bad Lands (August 24 to September 18). The northern half of the Hills were thoroughly studied; and an area forty miles by thirty miles, having its southwestern third in the badlands, extending from the White River near Interior east to Kadoka, and north to Cottonwood, on the C. N. W. R. R., was gone over. Several years spent in eastern South Dakota and an extensive western trip, has given the author a familiarity with these birds that makes the observations, I hope, reliable.

(2) Upon the list of the birds collected in 1857 and 1860 in what is now South Dakota by H. V. Hayden (late director of the U. S. Geological Survey) while on the Warren Expedition.

(3) Upon the list of the birds collected by G. B. Grinnell, Zoölogist to the Custer Expedition in 1874. He entered the Hills from the north July 20, continued south to the south central part (Harney Peak), swung east and north, leaving at the north corner (Bear Butte) August 16.

(4) H. E. Lee, now of Pierre, has done much good work, particularly upon the water birds of Bryant County, in the north-eastern part of the State.

(5) E. H. Sweet of Vermillion, South Dakota, spent from June, 1907, to September, 1908, on a claim just north of the Bad Lands in southwestern Stanley County, and observed in the area between the White River and the N. W. R. R. line, and between Interior and Kadoka. He did a little collecting. Sweet was my kind host during the time I spent in this area.

(6) Henry Behrens, of Rapid City, has for several years collected about Rapid, which lies in the eastern foot-hills. Most of his collection was gathered near his ranch in Spring Creek Valley, eight miles south of Rapid; all within twenty miles of Rapid City. His collection consists of about three hundred and fifty mounted

birds, representing one hundred and fifty species. Few records of abundance or of breeding have been kept.

LIST.

1. *Colymbus nigricollis californicus*. EARED GREBE.—Taken by Behrens. The most common grebe (Behrens).
2. *Colymbus auritus*. HORNED GREBE.—Two taken by Behrens. Rare.
3. *Podilymbus podiceps*. PIED-BILLED GREBE.—Two taken by Behrens. Rare.
4. *Gavia immer*. LOON.—One taken by Behrens.
5. *Larus delawarensis*. RING-BILLED GULL.—Taken by Grinnell on Little Missouri River; also by Behrens.
6. *Hydrochelidon nigra surinamensis*. BLACK TERN.* — Common summer resident.¹
7. *Pelecanus erythrorhynchos*. AMERICAN WHITE PELICAN.—Taken by Behrens. Migrant.
8. *Mergus americanus*. AMERICAN MERGANSER.* — Found nesting on Castle Creek (Grinnell).
9. *Lophodytes cucullatus*. HOODED MERGANSER.* — One taken in July by Sweet.
10. *Anas platyrhynchos*. MALLARD.* — Abundant migrant.
11. *Chaulelasmus streperus*. GADWALL.—Taken by Behrens.
12. *Mareca americana*. BALDPATE.—Nesting abundantly on Heart River (Grinnell). Taken by Behrens in May and June.
13. *Nettion carolinensis*. GREEN-WINGED TEAL.—Abundant migrant, as early as Sept. 1.
14. *Querquedula discors*. BLUE-WINGED TEAL.* — Breeds. These two are the dominant ducks.
15. *Spatula clypeata*. SHOVELER.* — Abundant migrant in southwest Stanley County.
16. *Dafila acuta*. PINTAIL.* — Abundant migrant.
17. *Marila vallisneria*. CANVAS-BACK.* — Reported common on White River in fall.
18. *Marila affinis*. LESSER SCAUP DUCK.—Two taken by Behrens.
19. *Clangula clangula americana*. AMERICAN GOLDEN-EYE.—Taken by Behrens once; May 4, 1902.
20. *Charitonetta albeola*. BUFFLE-HEAD.—Two taken by Behrens.
21. *Erismatura jamaicensis*. RUDDY DUCK.* — Common migrant; probably breeds.
22. *Chen hyperborea nivalis*. GREATER SNOW GOOSE.—Two taken by Behrens.

¹ An asterisk indicates the species represented in Behrens's collection.

23. *Branta canadensis*. CANADA GOOSE.—Abundant on Little Missouri River (Grinnell). Rare migrant (Sweet).
24. *Branta hutchinsi*. HUTCHINS GOOSE.—Rare migrant (Sweet).
25. *Botaurus lentiginosus*. AMERICAN BITTERN.*—Common summer resident (Sweet).
26. *Ardea herodias*. GREAT BLUE HERON.*—A few breed (Grinnell). Rare fall migrant (Sweet).
27. *Butorides virescens*. GREEN HERON.—A rare fall migrant on White River (Sweet).
28. *Rallus virginianus*. VIRGINIA RAIL.—One, Heart River (Grinnell).
29. *Porzana carolina*. SORA RAIL.—Four taken (Behrens).
30. *Fulica americana*. COOT.*—Abundant breeder in the few suitable localities.
31. *Phalaropus fulicarius*. RED PHALAROPE.—One taken, May 27, 1904, by Behrens.
32. *Lobipes lobatus*. NORTHERN PHALAROPE.*—Taken by Grinnell on Missouri River.
33. *Steganopus tricolor*. WILSON PHALAROPE.—Common migrant in southwest Stanley County.
34. *Recurvirostra americana*. AVOCET.—Occasional on Missouri River (Grinnell). One taken October 16, 1902, on Ranch; one September 5, 1903, on Box Elder Creek (Behrens).
35. *Gallinago delicata*. WILSON SNIPE.—Common migrant (Sweet). Probably breeds (Behrens).
36. *Micropalama himantopus*. STILT SANDPIPER.—Common migrant. Six taken by Behrens.
37. *Pisobia maculata*. PECTORAL SANDPIPER.—Abundant migrant.
38. *Pisobia bairdi*. BAIRD SANDPIPER.—Common migrant in southwest Stanley County.
39. *Pisobia minutilla*. LEAST SANDPIPER.*—Common migrant in southwest Stanley County.
40. *Limosa fedoa*. MARBLED GODWIT.—Two taken by Behrens.
41. *Catoptrophorus semipalmatus inornatus*. WESTERN WILLET.—Probably breeds; taken (Behrens).
42. *Totanus flavipes*. LESSER YELLOW-LEGS.—Common migrant.
43. *Helodramas solitarius*. SOLITARY SANDPIPER.—Abundant migrant and breeder.
44. *Heteractitis incanus*. WANDERING TATTLER.—One female taken by Behrens on his Ranch, June 1, 1901. "Very Rare."
45. *Bartramia longicauda*. BARTRAMIAN SANDPIPER.*—Common breeder on the plains.
46. *Actitis macularia*. SPOTTED SANDPIPER.*—Abundant breeder, in Hills as well as plains.
47. *Numenius longirostris*. LONG-BILLED CURLEW.*—Tolerably common breeder in wilder parts of plains country.
48. *Oxyechus vociferus*. KILLDEER.*—Abundant breeder in badlands.

49. *Colinus virginianus*. BOB-WHITE.*—Breeds near Rapid City. Very rare visitant (Sweet).
50. *Dendragapus obscurus*. DUSKY GROUSE.—Tolerably common in central part of the Hills (Hayden).
51. *Bonasa umbellus umbelloides*. GRAY RUFFED GROUSE.—Female taken. One brood seen in the Hills.
52. *Tympanuchus americanus*. PRAIRIE HEN.—Reported occasionally as far west as Kadoka.
53. *Pedioecetes phasianellus campestris*. PRAIRIE SHARP-TAILED GROUSE.—Abundant resident on plains.
54. *Centrocercus urophasianus*. SAGE GROUSE.*—Very locally distributed; resident.
55. *Zenaidura macroura carolinensis*. MOURNING DOVE.*—Common breeder. In autumn, when it flocks, it is very conspicuous.
56. *Cathartes aura septentrionalis*. TURKEY VULTURE.*—Tolerably common about the Hills. Abundant in badlands.
57. *Circus hudsonius*. MARSH HAWK.*—Most abundant hawk outside of the Hills proper. Resident.
58. *Astur atricapillus*. GOSHAWK.—Four taken by Behrens.
59. *Accipiter velox*. SHARP-SHINNED HAWK.—A pair, probably of these birds, was seen in badlands.
60. *Buteo borealis calurus*. WESTERN RED-TAILED HAWK.*—Tolerably common breeder.
61. *Buteo borealis kreideri*. KREIDER HAWK.—Rare; only one seen.
62. *Buteo lineatus*. RED-SHOULDERED HAWK.—Two taken by Behrens.
63. *Buteo swainsoni*. SWAINSON HAWK.*—Abundant in fall on plains. Breeds (Sweet).
64. *Archibuteo lagopus sancti-johannis*. AMERICAN ROUGH-LEGGED HAWK.*—Rare.
65. *Archibuteo ferrugineus*. FERRUGINOUS HAWK.*—Abundant resident in winter (Sweet).
66. *Aquila chrysaetos*. GOLDEN EAGLE.*—A resident in the badlands (Sweet). Seen in the Hills.
67. *Haliaeetus leucocephalus*. BALD EAGLE.*—Rare, resident in badlands (Sweet).
68. *Falco mexicanus*. PRAIRIE FALCON.—Abundant in badlands. Breeds. Three pairs taken by Behrens.
69. *Falco peregrinus anatum*. DUCK HAWK.—Six taken by Behrens. One seen on Bear Butte, near Sturgis.
70. *Falco columbarius*. PIGEON HAWK.—Rare autumn migrant. Four pairs taken by Behrens.
71. *Falco columbarius richardsoni*. RICHARDSON MERLIN.—Five taken by Behrens. Seen in southwest Stanley County.
72. *Falco sparverius*. SPARROW HAWK.*—Very abundant summer resident.

73. *Pandion haliaëtus carolinensis*. OSPREY.— One seen in September on the White River; one taken by Behrens.

74. *Asio wilsonianus*. AMERICAN LONG-EARED OWL.— A tolerably common breeder, in the cedars in the badlands, and in the Hills. Four pairs taken by Behrens.

75. *Asio flammeus*. SHORT-EARED OWL.* — Common breeder on the plains. Rare resident (Sweet).

76. *Otus asio*. SCREECH OWL.— Taken frequently by Behrens.

77. *Bubo virginianus pallescens*. WESTERN HORNED OWL.— Taken in winter by Sweet. Nine taken by Behrens.

78. *Nyctea nyctea*. SNOWY OWL.— Taken by Behrens in the winter.

79. *Speotyto cunicularia hypogæa*. BURROWING OWL.— Abundant on plains in prairie dog towns.

80. *Coccyzus americanus*. YELLOW-BILLED CUCKOO.— Five taken by Behrens.

81. *Coccyzus erythrophthalmus*. BLACK-BILLED CUCKOO.— Seen on White River (Sweet). Taken on Bad River by Hayden in 1857.

82. *Ceryle alcyon*. KINGFISHER.*— A common breeder.

83. *Dryobates villosus*. HAIRY WOODPECKER.*— Breeds; probably resident in Hills.

84. *Dryobates pubescens nelsoni*. NORTHERN DOWNY WOODPECKER.— Three taken in the Hills (Grinnell). Rare resident (Sweet).

85. *Melanerpes erythrocephalus*. RED-HEADED WOODPECKER.*— Most abundant woodpecker, taking the area as a whole.

86. *Asyndesmus lewisi*. LEWIS WOODPECKER. — Very abundant breeder in central wilder part of the Hills; uncommon elsewhere. In flight it resembles a small crow. This woodpecker is very proficient as a flycatcher.

87. *Colaptes auratus luteus*. NORTHERN FLICKER.* — Tolerably common breeder (Sweet).

88. *Colaptes cafer collaris*. RED-SHAFTED WOODPECKER.— Abundant in the Hills.

The most abundant woodpecker along the White River seems to be a hybrid between these Flickers.

89. *Phalænoptilus nuttalli*. NUTTALL POORWILL.— Heard in June in the badlands (Sweet). Taken in the Black Hills by Hayden.

90. *Chordeiles virginianus henryi*. WESTERN NIGHTHAWK.*— Abundant breeder on the plains.

91. *Chætura pelagica*. CHIMNEY SWIFT.— Reported by Grinnell from the Hills.

92. *Aëronautes melanoleucus*. WHITE-THROATED SWIFT.— Abundant breeder about the higher buttes in the badlands.

93. *Tyrannus tyrannus*. KINGBIRD.*— Abundant breeder, except in the central Hills.

94. *Tyrannus verticalis*. ARKANSAS KINGBIRD.*— Abundant summer resident on the plains.

95. *Sayornis phoebe*. PHOEBE.—Male taken by Behrens on his ranch, May 26, 1904.
96. *Sayornis saya*. SAY PHOEBE.*—Abundant summer resident on the plains, especially in the badlands.
97. *Myiochanes richardsoni*. WESTERN WOOD PEWEE.—Most common flycatcher in the Hills.
98. *Empidonax virescens*. GREEN-CRESTED FLYCATCHER.—One male taken by Behrens.
99. *Empidonax trailli*. TRAILL FLYCATCHER.—“One male taken” (Behrens).
100. *Otocoris alpestris leucolæma*. DESERT HORNED LARK.*—Abundant resident.
101. *Pica pica hudsonia*. MAGPIE.*—Numerous wherever there are trees, except in higher parts of the Hills. Resident.
102. *Cyanocitta cristata*. BLUE JAY.—Rare summer resident on White River as far west as southwest Stanley County.
103. *Perisoreus canadensis*. CANADA JAY.—Tolerably common in Hills. Pair taken (Behrens).
104. *Corvus corax sinuatus*. AMERICAN RAVEN.—Common (Grinnell). Taken at Fort Pierre (Hayden).
105. *Corvus brachyrhynchos*. AMERICAN CROW.—Tolerably common. Resident.
106. *Nucifraga columbiana*. CLARK NUTCRACKER.—Taken by Hayden in the Hills. (Sweet saw one of these birds in the fall of 1903 in Hutchins County, southeast part of the State.)
107. *Cyanocephalus cyanocephalus*. PIÑON JAY.*—Abundant breeder about Rapid City; not seen elsewhere.
108. *Dolichonyx oryzivorus*. BOBOLINK.*—Common summer resident in the Red Valley east of the Hills proper. Rare along the White River (Sweet).
109. *Molothrus ater*. COWBIRD.—Abundant summer resident except in the higher Hills.
110. *Xanthocephalus xanthocephalus*.—YELLOW-HEADED BLACKBIRD.*—Common breeder.
111. *Agelaius phoeniceus*. RED-WINGED BLACKBIRD.*—Common summer resident.
112. *Sturnella magna*. MEADOWLARK.—Occasional on White River (Sweet).
113. *Sturnella neglecta*. WESTERN MEADOWLARK.*—Abundant on prairies and plains.
114. *Icterus spurius*. ORCHARD ORIOLE.—Common along the White River in summer (Sweet).
115. *Icterus galbula*. BALTIMORE ORIOLE.—Same as preceding species. Rare breeder (Behrens).
116. *Icterus bullocki*. BULLOCK ORIOLE.—Taken at north end of the Hills by Grinnell; at Fort Pierre by Hayden, 1857. One seen at Rapid City, August 1. Five taken by Behrens June 14, 1899, etc.

117. *Euphagus cyanocephalus*. BREWER BLACKBIRD.*— Abundant breeder.
118. *Quiscalus quiscula æneus*. BRONZED GRACKLE.*— Common breeder in the Hills. Rare migrant in southwest Stanley County (Sweet).
119. *Hesperiphona vespertina*. EVENING GROSBEAK.— Taken by Townsend in 1824. Three taken by Behrens, January 1, 1905.
120. *Loxia curvirostra minor*. AMERICAN CROSSBILL.— Common breeder about Rapid City; feeding largely upon the aphid galls on the petioles of the leaves of the cottonwood.
121. *Leucosticte tephrocotis*. GRAY-CROWNED LEUCOSTICTE.— Tolerably common in winter. Taken by Behrens Nov. 10, 1900.
122. *Acanthis hornemanni exilipes*. HOARY REDPOLL.— Taken by Behrens.
123. *Acanthis linaria*. AMERICAN REDPOLL.— Taken: abundant in fall (Behrens).
124. *Astragalinus tristis*. GOLDFINCH.*— Tolerably common breeder.
125. *Spinus pinus*. PINE SISKIN.*— Two large flocks seen in the pines in the Hills.
126. *Plectrophenax nivalis*. SNOWFLAKE.*— Common in winter (Sweet).
127. *Calcarius lapponicus*. LAPLAND LONGSPUR.*— Abundant in winter (Sweet).
128. *Calcarius pictus*. SMITH LONGSPUR.— Common in summer in southwest Stanley County.
129. *Calcarius ornatus*. CHESTNUT-COLLARED LONGSPUR.*— Abundant breeder on plains; rare resident.
130. *Rhynchophanes mccowni*. MCCOWN LONGSPUR.*— Breeds near Whitewood. Common in winter (Sweet).
131. *Poecetes gramineus confinis*. WESTERN VESPER SPARROW.*— Black Hills (Hayden). Abundant in fall.
132. *Coturniculus bairdi*. BAIRD SPARROW.— Taken by Behrens, Sept. 1, 1900. Rare.
133. *Coturniculus savannarum bimaculatus*. WESTERN GRASSHOPPER SPARROW.*— Occasional, nesting on prairies about the Hills; common breeder in southwest Stanley County.
134. *Chondestes grammacus strigatus*. WESTERN LARK SPARROW.*— Common breeder.
135. *Zonotrichia querula*. HARRIS SPARROW.— Common migrant (Sweet).
136. *Zonotrichia leucophrys*. WHITE-CROWNED SPARROW.*— Black Hills (Hayden).
137. *Zonotrichia albicollis*. WHITE-THROATED SPARROW.— White River (Hayden).
138. *Spizella monticola ochracea*. WESTERN TREE SPARROW.*— Common migrant (Sweet).
139. *Spizella passerina arizonæ*. WESTERN CHIPPING SPARROW.*— Tolerably common in summer.

140. *Spizella pallida*. CLAY-COLORED SPARROW.— Abundant in the Hills. Breeds.
141. *Spizella breweri*. BREWER SPARROW.— Male taken by Behrens, July, 1899. Rare.
142. *Junco hyemalis*. SLATE-COLORED JUNCO.— A pair taken by Behrens. Common migrant (Sweet).
143. *Junco aikeni*. WHITE-WINGED JUNCO.* — Abundant breeder in center of the Hills. Taken by Hayden.
144. *Junco phænotus caniceps*. GRAY-HEADED JUNCO.— Taken by Hayden and by Behrens. Seen in August, in the northern part of the Hills (Custer Peak).
145. *Melospiza melodia*. SONG SPARROW.* — Tolerably common breeder about the Hills.
146. *Melospiza georgiana*. SWAMP SPARROW.— Male taken by Behrens, June 14, 1899. Rare.
147. *Pipilo erythrophthalmus*. TOWHEE.— Once seen in summer. (Sweet).
148. *Pipilo maculatus*. ARCTIC TOWHEE.— Abundant breeder in cañons of the Hills.
149. *Zamelodia melanocephala*. BLACK-HEADED GROSBEAK.— One seen August 1 near Rapid. Taken by Hayden in the Bijou Hills east of the Missouri River. June and July (Behrens).
150. *Guiraca caerulea lazula*. WESTERN BLUE GROSBEAK.— Taken August, 1899, and September 2, 1900. Breeds (Behrens).
151. *Passerina cyanea*. INDIGO BUNTING.— Nests occasionally in the Hills (two broods August 4 near Blackhawk).
152. *Passerina amoena*. LAZULI BUNTING.* — Breeds near Fort Pierre (Hayden). Seen in Sanborn County (eastern part of State).
153. *Spiza americana*. DICKCISSEL.* — Tolerably common, breeder, along White River.
154. *Calamospiza melanocorys*. LARK BUNTING.— Common breeder.
155. *Piranga ludoviciana*. LOUISIANA TANAGER.* — Abundant breeder in the Hills.
156. *Progne subis*. PURPLE MARTIN.— Common in the Hills.
157. *Petrochelidon lunifrons*. CLIFF SWALLOW.* — Common breeder.
158. *Hirundo erythrogastra*. BARN SWALLOW.* — Common breeder.
159. *Tachycineta thalassina lepida*. VIOLET-GREEN SWALLOW.* — Tolerably common nester in the Hills.
160. *Riparia riparia*. BANK SWALLOW.— Tolerably common summer resident.
161. *Stelgidopteryx serripennis*. ROUGH-WINGED SWALLOW.* — Rare summer visitor.
162. *Bombycilla garrula*. BOHEMIAN WAXWING.— Taken by Behrens, January to February, 1899. "The only winter when it was seen."
163. *Bombycilla cedrorum*. CEDAR WAXWING.— Common on the Missouri River (Grinnell).

164. *Lanius borealis*. NORTHERN SHRIKE.*—Common winter visitor (Sweet).

165. *Lanius ludovicianus excubitorides*. WHITE-RUMPED SHRIKE.*—Abundant breeder in cottonwoods.

166. *Vireosylva gilva swainsoni*. WESTERN WARBLING VIREO.—Taken on Bear Butte (Grinnell). Nests frequently in Rapid City.

167. *Lanivireo solitarius plumbeus*. PLUMBEOUS VIREO.—Common at Harney Peak (Grinnell).

168. *Dendroica æstiva*. YELLOW WARBLER.*—Nests commonly about the Hills.

169. *Dendroica auduboni*. AUDUBON WARBLER.*—Seen frequently in the Hills; probably nests. Common spring migrant along White River (Sweet).

170. *Dendroica striata*. BLACK-POLL WARBLER.—Pair taken by Behrens.

171. *Geothlypis tolmiei*. MACGILLIVRAY WARBLER.—Taken by Hayden in the Hills. Occurs locally in low boggy woods in the higher Hills. A common nester. A migrant in Stanley County.

172. *Geothlypis trichas occidentalis*. WESTERN YELLOW-THROAT.*—Common breeder.

173. *Icteria virens longicauda*. LONG-TAILED CHAT.*—Taken at mouth of White River and at Fort Pierre (Hayden). Seen in badlands in September.

174. *Setophaga ruticilla*. AMERICAN REDSTART.—Common breeder on White River (Sweet).

175. *Anthus pensilvanicus*. AMERICAN PIPIT.—Taken in the Black Hills in 1857 by Hayden.

176. *Anthus spraguei*. SPRAGUE PIPIT.—Common in summer (Sweet).

177. *Cinclus mexicanus unicolor*. AMERICAN DIPPER.—Two or three seen on each large mountain torrent.

178. *Oroscoptes montanus*. SAGE THRASHER.—Taken by Behrens, Nov. 12, 1900. Rare.

179. *Mimus polyglottos leucopterus*. WESTERN MOCKINGBIRD.—Taken by Hayden in 1860 in the Hills.

180. *Dumetella carolinensis*. CATBIRD.*—Rare in summer at Rapid; common in southwest Stanley County.

181. *Toxostoma rufum*. BROWN THRASHER.*—A common breeder along White River.

182. *Salpinctes obsoletus*. ROCK WREN.*—A very abundant and conspicuous breeder, on hog-backs of the rim of the Hills, and in the badlands, where it nests in crevices. The badland form is very pale in color.

183. *Thryomanes bewicki*. BEWICK WREN.—Taken by Behrens, August 1, 1899.

184. *Troglodytes ædon parkmani*. WESTERN HOUSE WREN.—Common breeder along White River in Stanley County.

185. *Sitta carolinensis aculeata*. SLENDER-BILLED NUTHATCH.*—Common breeder in the Hills.

186. *Sitta canadensis*. RED-BELLIED NUTHATCH.— A common resident in the Hills.

187. *Penthestes atricapillus septentrionalis*. LONG-TAILED CHICKADEE.* — Abundant breeder.

188. *Myadestes townsendi*. TOWNSEND SOLITAIRE.— Taken by Hayden; abundant breeder about Custer Peak; young seen.

189. *Hylocichla mustelina*. WOOD THRUSH.— Common breeder at Fort Pierre (Hayden).

190. *Hylocichla aliciae*. GRAY-CHEEKED THRUSH.— Black Hills, 1857 (Hayden).

191. *Hylocichla ustulata swainsoni*. OLIVE-BACKED THRUSH.— Rare migrant (Sweet).

192. *Merula migratoria*. ROBIN.*— Rare summer visitant, except in a few foot-hill towns.

193. *Sialia sialis*. BLUEBIRD.— Nests at Rapid City. Common in summer (Sweet).

194. *Sialia currucoides*. MOUNTAIN BLUEBIRD.*— Very abundant (Grinnell). Only a few seen, in the Hills.

BARROW'S GOLDEN-EYE IN MASSACHUSETTS.

BY WILLIAM BREWSTER.

It is never very pleasant to admit mistakes that one has made, however pardonable they may appear. If the fact of their commission can be established only by elaborate argument, backed by evidence not perhaps wholly conclusive, the necessity for confession is doubly hard to face. Yet it is to precisely such a task as this that I now find myself committed. I came near undertaking it as far back as 1880 but I was not then prepared to discuss the matter effectively and it was afterwards forgotten. Now that it has again been brought to my attention I shall deal with it as briefly as possible.

Many years ago I reported in the 'American Naturalist'¹ that "an adult female" Golden-eye "pronounced by Prof. Baird" to be "unquestionably *B. Icelandica*" had come into my possession "in the flesh from Cape Cod, December 7th, 1871" and that during

¹ Vol. VI, No. 5, May, 1872, pp. 306, 307.

the following winter I had "seen numbers of females and two fine adult males" of this species "in the Boston markets, most of them shot within state limits."

Our markets teemed with Golden-eyes that winter and I devoted a good deal of time to studying and comparing them. The game dealers said that most of them came from Cape Cod, but I learned afterwards that Montreal and Quebec were also rather frequent sources of supply; a fact which now leads me to doubt if any of the birds I saw in the markets at that time were certainly killed in Massachusetts, although the female that Prof. Baird examined was probably sent to me directly from Cape Cod as the wording of my published statement indicates. One of the adult males—still in my collection—was at first confidently believed to be a Massachusetts bird but on its present label, written in 1880, and in a catalogue entry, made that same year, the words "Cape Cod" are followed by a question mark. This specimen is a typical example of *islandica* as, no doubt, was the other male referred to in my record although I have now no distinct recollection of the latter, nor of what became of it.

Of the hundreds of female Golden-eyes which I saw in the markets in the winter of 1871–1872 a small proportion (not exceeding five per cent, if I remember rightly) differed from the others in having more or less orange or bright yellow on the bill (usually on the culmen just behind the nail) and an unbroken band of dull black dividing the white on the wing. Thinking that the birds thus marked might be Barrow's Golden-eyes I forwarded the head and wings of one of them to Prof. Baird. In a letter dated at Washington on December 13, 1871, he writes: "As far as I can judge by what you have just sent me of the remains, your bird is the female *Bucephala Icelandica*. Our series of this is not very good, but I have little if any doubt of the correctness of this identification. Let me know if you wish me to return the head. If not I will make a skeleton of it." A week or two later I sent him the skin of the female afterwards recorded in the 'American Naturalist' as having been "obtained from Cape Cod, December 7th." Concerning it he wrote on December 29, 1871, as follows: "The Golden-eyed Duck is, I think, unquestionably, the *Icelandica*, agreeing very well with the typical specimen in our collection; although the

orange spot [on the bill] appears to be common for this species, it is not entirely peculiar to it, since other kinds (*sic*) frequently possess it."

During the period when Prof. Baird was most actively engaged in studying and writing about North American birds many of them were represented in collections — even those of our larger museums, such as the Smithsonian Institution — by only a very few specimens and these, perhaps, too ill supplied with data, or in too poor condition to be of much value for scientific purposes. Hence he often had to deal with difficult problems in ornithology without the aid (now considered so indispensable) of adequate material for study and comparison. But his acumen in detecting slight or obscure characters and differences was so remarkable, and his judgment in deciding as to their value and signification so nearly unerring, that he made few positive mistakes, while most of his published opinions and deductions have so stood the test of time that they appear not less sound and convincing now than they did thirty or forty years ago. He was not infallible, however, and in respect to my Golden-eyes I fear he was at least partly in error. Unfortunately, neither of the specimens he saw is now available for examination. He probably kept the head but if so it does not seem to be in the Smithsonian Institution, for Dr. Richmond writes me under date of December 30, 1908: "I have searched our records and those in the osteological collection, and find only one head mentioned that may belong to the case referred to in your letter. This is a head catalogued by Mr. Ridgway in Nov., 1883, as '*Clangula americana* ♂ ad.,' the locality and donor said to be unknown.... I cannot find any record of this specimen having been catalogued between 1871 and 1872, or of any specimen received from you before about 1879."

What became of the skin I am unable to say definitely but I think it remained in my possession until 1880 when it may have been discarded with a number of other birds which I gave away or burned just before making a catalogue of my collection, in which this Golden-eye was not entered. Of course I should have kept it because of the fact that it had served as the basis of a published record, after having been identified by Prof. Baird, but it was in poor condition and before parting with it I had become satisfied

that it was not a Barrow's Golden-eye. Moreover, I then had—and have still, for that matter—other specimens almost exactly like it and I continue to see them in our markets. In my opinion all such birds should be referred to *americana*, despite the fact that some of them appear to approach rather closely to *islandica*.

The points of differences between the female of *islandica* and that of *americana* are still involved in no little doubt or obscurity. Few ornithologists seem to have given them much personal attention, and I know of but two whose published statements concerning them appear to have been based on a careful study of any considerable number of specimens. One of the authors is Mr. Ridgway. In Volume II of the 'Water Birds of North America,' published in 1884, he says (on page 42) that the females of the two species are "so much alike that, with the series at our command (about twenty specimens, including six unquestionably referable to *C. islandica*), we must acknowledge our inability to give infallible points of distinction. The examples which are known to represent *C. islandica* differ from the positively determined females of *C. glaucion* [*i. e.*, *americana*] in the following respects: (1) The color of the head and upper half of the neck is considerably darker, being a rich sepia- or snuff brown, rather than grayish brown; (2) the greater wing-coverts are distinctly tipped with black, forming a conspicuous dusky stripe between the two larger white areas of the wing, which in *C. glaucion* are (usually, at least) merged into one continuous space. Further than these we find no distinction, while indeed some examples are so decidedly intermediate in both respects as to render it quite uncertain to which species they belong. Of the two characters named, however, the color of the head is far the more constant, and may, perhaps, be found quite distinctive." To all this I fully agree although I doubt if the characters here discussed by Mr. Ridgway equal in value or constancy certain others of which he makes no mention in this connection.

The other author to whom I have just alluded is the late Dr. J. Bernard Gilpin. In a paper entitled 'The Golden Eyes, or Garrots in Nova Scotia,'¹ published more than thirty years ago, he has much of interest to say about the species *americana* and

¹ Transactions Nova Scotia Inst. Sci., Vol. IV, 1878, pp. 390-403.

islandica. He seems to have been familiar with them, living as well as dead, for he was accustomed to watch them swimming in pairs and small flocks in Digby Basin and to handle freshly killed specimens, apparently in some numbers. Hence his testimony regarding them is of importance and entitled to careful consideration. Without doubt it may be relied on as far as it relates to the adult males of the two species, concerning which he discovered that the trachea, bronchi and lower larynx of the one are very unlike those of the other; the difference being illustrated by a plate that accompanies his article. But his impressions respecting the females and immature males are, in my opinion, somewhat less trustworthy; indeed I cannot help suspecting that some of them were based on wrong identification of specimens. Thus he asserts — or at least plainly implies — that the female of *americana* is quite as likely as that of *islandica* to “have nearly the whole of the bill” yellow — which is contrary to my experience — and he is quite positive that the female of *islandica* sometimes possesses an entirely black bill — which I have never known to be the case. Nor can I agree with him in thinking “that the yellow is only as it were a transient mark of the young, and that the adults of both species have dark bills.” I should be equally unwilling to support the reverse of this proposition, however, since the presence or absence of bright yellow does not seem to me to be often if ever dependent on age. Dr. Gilpin’s final conclusions are given on page 398 of his paper in the following quaint but expressive language:— “Here then we have two species, in the male easily distinguished by colour, but in the female by colour impossible, and our only guide is that the Rocky Mountain bird [*islandica*], though larger, has a shorter and higher bill, and in consequence of this height a difference in the shape of the forehead, where the feathers meet the culmen, tolerably well enough shown in the male adults, but more obscurely in the females and young — all being in the recent state, and in the dried or mounted specimens scarcely discernible.” To this he adds (on page 399), “in the females as regards colour no difference can be found.”

Although Dr. Gilpin’s conclusions may be sound enough in the main I do not consider them perfectly satisfactory in so far as they apply to female birds. In dealing with these he was evidently

accustomed to consider only the size or shape of the bill as of importance for purposes of identification; Mr. Ridgway seems to have relied at first (*i. e.*, in 1884) solely on the color of the head and neck and on the presence or absence of a dark bar on the wing, as marks of distinction; but in both editions (published respectively in 1887 and 1896) of his 'Manual of North American Birds' he recognized additional characters by indicating briefly, without discussion, that in Barrow's Golden-eye the bill is shorter and more abruptly tapered, with a broader nail, and the gray band on the chest of the female broader, and usually deeper, than in the American Golden-eye. My own impression of the matter, based on the examination of a large number of American Golden-eye and of no less than eleven undoubted specimens¹ of Barrow's Golden-eye now in my collection, is that typical females of *islandica* are quite as unlike those of *americana* in color and markings as in the shape and proportions of the bill, and that the two birds may best be distinguished from one another by the following characters, most of which have been noted, of course, by previous authors.

Clangula islandica. Bill comparatively short and abruptly tapered, laterally as well as vertically; sometimes almost wholly yellow in color (except on the nail and cutting edges which are always (?) black), invariably (?) with more or less yellow on both mandibles near the tip. Brown of head and neck rich, dark sepia, often tinged with blackish or (slightly) with purplish. Ashy on chest broad and pronounced. Greater wing-covert usually (but not invariably) tipped with black which, as a rule, forms a practically continuous dark band dividing the white into two distinct areas.

Clangula clangula americana. Bill longer and less abruptly tapered, especially laterally, the reduction in width towards the tip being much less noticeable; both mandibles often unicolored, or nearly so, the color being for the most part brown varying with age (?) from light wood brown to very dark brown or blackish. Brown of head and neck lighter and commonly hair-brown or grayish umber. Ashy band on chest narrower and paler, sometimes almost wanting. White patch on wing often immaculate or only imperfectly divided by a line of disconnected dark spots on the tips of the greater coverts.

The decided reduction in the width of the bill of *islandica* near its tip is, I think, the best of all the distinctive characters, afforded

¹ With a single exception, all these birds were taken on the coast of Maine, in the months of January, February, March and April.

by the female of this species. The bill of *americana*, when viewed from above, has a very different appearance; being *much more typically duck-like* in shape. It rarely, if ever, shows any pure yellow except near the tip where there is sometimes a narrow bar of this color on the culmen, just behind the nail, with perhaps some indication of a corresponding marking on the lower mandible, also. The dark bar on the wing is much less often lacking in *islandica* than in *americana* but as it is not infrequently quite as conspicuous and perfect in the latter as in the former it possesses no great value as a diagnostic character.

Many writers have asserted that *islandica* is the larger of the two forms, especially with respect to its wing measurements. There is perhaps some average difference of this kind although the smallest bird of either kind in my collection is an adult female of *islandica* taken in June among the mountains of British Columbia. As to the difference in the width of the nail at the tip of the bill, to which Mr. Ridgway has called attention, I am unable to verify it.

If I were asked to restate the characters just formulated, placing them in the order of their relative importance, I should arrange them thus: (1) Shape and proportions of bill; (2) coloring of head and neck; (3) coloring of bill; (4) presence or absence of continuous dark band across white wing patch. When all the marks of distinction which I have attributed to one or the other species are possessed in *combination* by a single bird the identity of the specimen is open to no doubt, but unfortunately there is perhaps no one of them all which is invariably confined to the form of which it is ordinarily characteristic. Indeed, one cannot handle any considerable number of female Golden-eyes killed in winter in New England without coming upon specimens which are far from typical, while some of these are likely to be so nearly "half-way" intermediates between *americana* and *islandica* that their definite reference to either form is impracticable, except on purely arbitrary grounds. I used to suspect that such birds might be of hybrid origin but I now incline to the opinion that they represent nothing more nor less than a curiously one-sided transfer or borrowing of external characters which are not always constant. They fail, however, as far as I have observed, to furnish series perfectly connecting *americana* with *islandica*. Oddly enough the unfilled gap

lies not midway between the two species, as might be expected, but much the nearer to *islandica*. In other words *americana* seems to approach *islandica* very closely through birds possessing certain characteristics of the latter species, whereas *islandica* exhibits little or no tendency to appropriate any of the characters of *americana*. Or, to put the case still more definitely, if somewhat figuratively, *americana* may be said to have forged towards *islandica* a closely-welded chain, quite continuous up to the point where it abruptly terminates, just before reaching the narrowly circumscribed limits of the area occupied by *islandica*, a comparatively stable and immutable form. For although the birds which supply the links of this chain grade perfectly into typical *americana* on the one hand they do not seem ever to pass a definitely fixed point in their approaches to *islandica* on the other. Yet collectively they exhibit, more or less unmistakably, nearly all the characteristics of ultra-typical specimens of *islandica*. Because of these conditions it has been my custom, when identifying female Golden-eyes taken in America, to refer all specimens not typical— or nearly so — of *islandica* to *americana*. This practise may be somewhat arbitrary but it is at least consistent with the facts in the case, as I understand them. It is possible, of course, that my evidence is incomplete and that the missing links in the chain of approaching females to which I have called attention may yet be found. But if, as I am inclined to believe, they do not exist, how can their absence be explained? Before attempting to answer this question it may be well for me to say a few words about the variations that I have noted in male Golden-eyes of both kinds.

There is never any difficulty in separating the adult males of the two species. They are, indeed, so strikingly unlike that one can distinguish them almost at a glance, without direct comparison. The male of *islandica* seems subject to remarkably little variation of any obvious kind. The male of *americana* is less uniformly characterized. It occasionally has a bill shaped much like that of *islandica* or white cheek markings so elongated vertically as to somewhat resemble those of that species. Dr. Gilpin asserts that "both males have the violet wash in the green of the head" but I have never known it to be shown conspicuously by *americana*, nor to be other than conspicuous and widespread on the head of

islandica. All the other external characters appear to be quite constant. Perhaps the most important as well as interesting of them all is one which the late Dr. J. A. Jeffries was the first to bring to the notice of ornithologists. It concerns certain of the white and black scapular feathers. With these, as Dr. Jeffries says,¹ "the terminal part of the white breaks off, and leaves the black edges projecting beyond" in Barrow's Golden-eye, whereas "this breakage does not take place in the common Golden-eye." This curious difference has been shown with absolute uniformity in all the specimens that I have ever examined.

That the males, as well as the females, of *americana* tend to vary in the direction of *islandica*, whereas both sexes of the latter are almost wholly free from variability of a corresponding kind, is interesting and perhaps, also, significant — if we could but grasp the underlying meaning of the fact. The approaches shown by the adult males are, however, much less frequent and pronounced than those afforded by the females. Indeed, I have seen only a very few males of *americana* which were not typical in every essential particular, and I have yet to meet with one which could fairly be regarded as a "half-way" intermediate between that species and *islandica*.

Since the adult male of Barrow's Golden-eye differs from that of the common Golden-eye, not only in respect to pronounced and stable external character but in internal structure, also (as Dr. Gilpin has shown), it would seem to be beyond question that the two forms are specifically distinct. Nevertheless they may interbreed occasionally, as Ducks of other and less closely allied kinds are known to do. If the intermediate birds to which I have alluded were of both sexes and of infrequent occurrence it might be possible to regard them as hybrids or the progeny of hybrids and to explain their various peculiarities by the application of one or another of Mendel's interesting laws — as has been done so convincingly of late in case of certain aberrant Warblers belonging to the genus *Helminthophila*. But as they appear to be invariably females and by no means uncommon, and as interbreeding of whatever kind is not known to ever produce offspring exclusively of one sex — at

¹ Bull. N. O. C., V, No. 3, July, 1880, p. 189.

least among birds — it appears improbable, to say the least, that hybridity can have had much if anything to do with the present case. The theory of mutation, so much discussed of late, is perhaps worth considering in this connection for it may throw light on some of our present difficulties. It has been tested, I believe, chiefly if not solely by observations made on domesticated animals and cultivated plants. Some of these are said to have furnished proofs that elementary, yet strongly characterized and apparently stable, species may originate from other and more variable ones by what are termed “jumps” or “steps.” A striking example of this is given by Darwin who, it is now claimed, recognized some of the principles of mutation although he did not deal with them under that name. He says that “japanned” or “black-shouldered” Peacocks have appeared “suddenly in flocks of the common kind” and that they “propagate their kind quite truly,” constituting what is considered by good authority to be a “distinct and natural species.” Even more remarkable is his statement that they tend “at all times and in many places to reappear,” by which he means, apparently, that a long “jump” which gives immediate birth to a well marked form breeding true to type may be followed at rather frequent intervals by precisely similar “jumps,” with identically the same results. More recent observations, relating mainly to carefully controlled or fostered plants and animals, have seemed to confirm this surprising fact and to show further that there are species which throw off, thus abruptly, not only strongly characterized and constant forms, but also great numbers of less pronounced and stable ones. In other words mutations which yield no very important or lasting results appear to occur oftener than those which result in the establishment of what are known as good species.

Since these wonderful things are thought to take place among animals and plants under domestication why may they not happen — if less often — in untrammelled Nature? It has been inferred that they do so happen but the fact remains to be proved, I believe. If we might assume, as a mere tentative proposition, that *Clangula islandica* is a simple mutant of *americana*, resulting from a long “step” (or succession of “steps”) taken in the more or less remote

¹ Animals and Plants Under Domestication, New York, 2d ed., 1876, Vol. I, pp. 306, 307.

past, it would follow, as a matter of course, that the interesting approaches to the former species shown by certain aberrant specimens of the latter afford evidence that "steps" shorter and less decisive than that (or those) which produced *islandica* have been and continue to be, made by *americana*, in the same general direction.

Thus far, indeed, the so-called laws of mutation might be made to fit well with the facts and conditions of the case which we are considering. But if I understand these laws correctly they would fail to explain why the representatives of *americana* which approach *islandica* at all closely are invariably females. Nor do I know of any other theory which is not similarly disappointing in this respect.

In their 'Birds of Massachusetts' Messrs. Howe and Allen mention (on page 55) a male Barrow's Golden-eye "labeled January 27, 1879, in the mounted collection of the Boston Society of Natural History, which appears unrecorded" and which is supposed to have been taken at Ipswich. There would seem to be little or no doubt that this specimen is the same as that referred to briefly in one of my note books under date of "January 27, 1869" as "an adult ♂ shot at Ipswich, Mass. by E. C. Greenwood. Purchased of him by Dr. Brewer for B. S. N. H." If I am right in so thinking, the record is open to grave suspicion if, indeed, it be not quite valueless, for although Greenwood is not known to have resorted to dishonest practises of any kind during the earlier years of his career as a professional collector, he was convicted in 1884 of having supplied false data with a number of mounted birds which he had just sold to the curator of a certain museum in eastern Massachusetts.¹

Mr. Job has reported² that "a fine male" Barrow's Golden-eye sent to a Mr. Wood "to be mounted, in the autumn of (about) 1885," was shot in Plymouth. Dr. Townsend³ considers it "probable that a beautiful male in the collection of the Lawrence Natural History Society," said to have been "shot near Lynn, about 1877," is one and the same bird with that referred to by the late Dr. J. A. Jeffries in a manuscript "note written in March, 1878," as "shot off

¹ See Brewster, Auk I, No. 3, July, 1884, pp. 295-297.

² H. K. Job, Auk, XIII, No. 3, July, 1896, p. 202.

³ C. W. Townsend. Birds of Essex County, Mass. Memoirs Nutt. Orn. Club, III, 1905, p. 139.

Nahant this winter on authority of Tufts." No statement so brief could well be more satisfactorily attested; for A. M. Tufts, the Lynn taxidermist who died ten or a dozen years ago, was a perfectly reliable man and too familiar with both kinds of Golden-eyes to make any mistake with regard to a male of either species. Nor would there seem to be reason to question the Plymouth record, since Mr. Job puts faith in it.

There is still another Massachusetts record,¹ relating to Nantucket, where a male Barrow's Golden-eye "in the adult plumage" is said to have been taken on December 17, 1906. As this specimen was "destroyed in ignorance," before being seen by any one except a few native gunners, its subsequent identification on hearsay evidence, merely, cannot be regarded with much confidence.

The Museum of Comparative Zoölogy has just received by gift, from Mr. Matthew Luce of Boston, a fully adult male of Barrow's Golden-eye mounted by the M. Abbott Frazar Company. Concerning this bird Mr. Luce writes me, under date of December 22, 1908, as follows: "I shot the Barrow's Golden-eye on Friday morning, the 11th of December [1908] in the marsh known as Nauset Bay at Eastham, Mass. There were two others with this bird, a female which I secured, and another male, but whether the other male was a Barrow's or not, I could not tell. The female, I took to be a common Whistler. There was a light southwest wind with an occasional flurry of snow. I had decoys out and got a number of the ordinary Whistlers besides this Barrow's."

I feel peculiarly indebted to Mr. Luce for his kindness in thus enabling me to couple with the admission of errors committed in my youth respecting Barrow's Golden-eyes, this definite and obviously authentic record of the recent occurrence of the species in Massachusetts.

¹ Auk, XXV, No. 2, April, 1908, p. 217.

THE HABITAT GROUPS OF NORTH AMERICAN
BIRDS IN THE AMERICAN MUSEUM OF
NATURAL HISTORY.

BY J. A. ALLEN.

Plates I-IV.

METHODS of exhibition in museums of natural history have greatly changed during the last twenty years. Previously it was nearly the universal custom to mount birds as single specimens, on stands or perches, the well-known T-perch sufficing for all perching birds, and flat stands for terrestrial birds, with no attempt to illustrate their habits or natural surroundings.

The American Museum of Natural History, in New York City was the first museum in this country to depart radically from this time-honored method, by direction of its late President, Morris K. Jesup. Early in 1887, twelve groups, illustrating the nesting habits of as many species of our common birds, were placed on exhibition, the cost of their preparation having been generously contributed by the late Mrs. Robert L. Stuart, widow of a former president of the Museum.¹ The accessories for the groups were prepared by the late Mrs. E. R. Mogridge, of London and New York, whose admirable work at the South Kensington Museum had attracted Mr. Jesup's attention. Her methods of reproducing in facsimile the foliage and flowers that composed the principal accessories of these groups was known for a time only to Mrs. Mogridge and her brother, Mr. Mintern, who was her personal assistant in the work, but later she taught her methods to others, forming classes for this purpose, not only in New York but in other cities, where she was employed by different museums for the construction of similar groups. In this way the preparation of such exhibits was undertaken elsewhere, notably in Washington, Pittsburgh, Chicago, and Springfield (Mass.).

During the following ten or twelve years the number of bird groups at the American Museum increased to fifty or more. The

¹ Cf. Auk, IV, 1887, p. 271.

group method of exhibition was also extended to insects and to mammals, of which latter a number of groups illustrating the habits of species found near New York City were prepared.

Prior to 1893, the construction of the groups was directed by the late Jenness Richardson, Chief Taxidermist of the Museum, who not only designed them, but collected and assembled the materials.¹ Later, for some years, the work was carried on by his successor, Mr. John Rowley, whose skill as a preparator is widely recognized.

The first fifty bird groups illustrate the nesting habits and location of the nest of as many species of North American birds, mostly the common species, from Grebes to Thrushes. They include a few Hawks and Owls, and various water birds, among the latter a Labrador Duck group, containing five specimens of this rare and now extinct species.

The special subject of the present article is the new series of so-called 'Habitat Groups,' formally opened to the public on February 25, 1909, the occasion having been made a public function, under the patronage of Professor Henry Fairfield Osborn, President of the Museum, and Mr. John L. Cadwalader, one of the principal contributors to the 'North American Ornithological Fund,' a generous gift from a few members of the Museum which rendered possible the gathering and preparation of the material for these expensive groups. They number about twenty-five, and are constructed on a much larger scale and with a much broader purpose than the earlier groups mentioned above, they being intended to illustrate not only the nesting habits of the species shown, but also their haunts or 'habitats.' The area of these groups ranges from 60 to 160 square feet, to which is added a panoramic background, which in most cases merges insensibly into the group itself. The backgrounds are painted by skilful artists, generally from studies made at the actual site represented. They are thus, like the accessories among which the birds with their nests and eggs or young are grouped, accurate and realistic representations of the actual scenes in nature which the species had chosen as their nesting haunts. They thus possess a scenic and geographic value in addition to their ornithological interest. These landscapes naturally

¹ Cf. Auk, X, 1893, p. 307.

represent widely diversified types of country, since they include the famous Bird Rocks in the Gulf of St. Lawrence, several bird keys in the Bahamas, a cactus desert in Arizona, plains and badlands in the Middle West, alpine scenes in the Rocky Mountains, the Palisades and the Hackensack marshes near New York City, and other localities of special interest.

In connection with the recent formal opening of the Gallery of the Bird Hall, the Museum has issued a 'guide leaflet' to this series of 'habitat groups,'¹ containing a full-page half-tone illustration of each, from photographs, and a transcript of the descriptive group labels. On this brochure is largely based the following account of these notable groups, which form a striking feature of the Museum's recent remarkable progress in placing before the public attractive and instructive exhibits in many lines of research. They are here given in the order of sequence in the hall, beginning at the right (southeast corner of the gallery).

Summer Bird-life of Cobb's Island, Virginia. Background by Walter Cox. Birds by H. C. Denslow.—Cobb's Island, off the coast of Virginia, is a shell-strewn sand-bar, seven miles long and about the same distance from the mainland, and thus affords ideal conditions as a breeding resort for certain kinds of water birds, as Terns of different species, Black Skimmers, Oyster-catchers and Plovers, while the adjoining marshes on its western border are the favorite nesting places of the Clapper Rail.

This group contains 63 birds, representing seven species. The scene is a sandy beach, with oyster and other sea shells, interspersed with tufts of the coarse grass characteristic of such beaches. The background is a view looking seaward, the whole forming a well-blended shore scene. The Least Terns, which formerly bred here in thousands, and are introduced into the group, were practically exterminated some years since, when 1200 were killed in a single day for millinery purposes, and the island was nearly depopulated of bird life.

¹ The Habitat Groups of North American Birds in the American Museum of Natural History. By Frank M. Chapman, Curator of Ornithology. No. 26 of the Guide leaflets of the American Museum of Natural History. Edmund Otis Hovey, Editor. New York. Published by the Museum, February, 1909.—8vo, pp. 48, with colored frontispiece (Wild Turkey), and a half-tone illustration of each group, from photographs.

Duck Hawk on the Palisades. Background by Hobart Nichols. — The nest is on a shelf of a cliff, and contains down-covered young; one of the old birds is approaching the nest bearing in its talons a domestic pigeon. The locality is the western shore of the Hudson, at Englewood, New Jersey, and the outlook is northward from the 'Gorge,' overlooking the river.

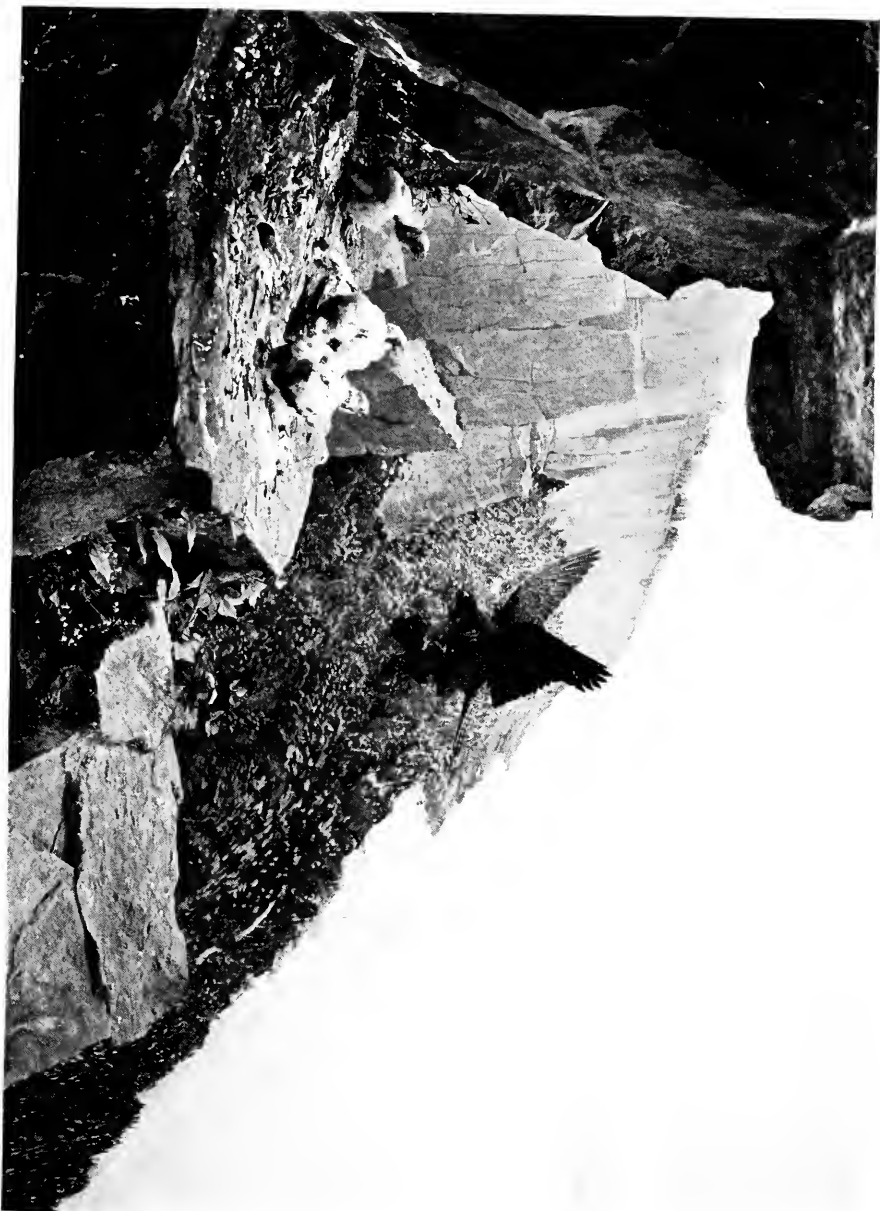
August Bird-Life of the Hackensack Meadows. Background by Bruce Horsfall. Birds by E. W. Smith. — The locality is the marshes of the Hackensack River, near Little Ferry, New Jersey. The view is westward, across the marshes. Cattails, wild rice, reeds, sagittarias and other aquatic plants make up the foreground, which is enlivened by the rose-colored flowers of the marsh-mallow and the scarlet of cardinal flowers. The purpose of the group is to illustrate a night resort of Swallows, and the feeding grounds of Reedbirds, Red-winged Blackbirds, and other species which visit the marshes in large numbers to feed on the wild rice. The birds are perched on the cattails and wild rice, with rails and a pair of Wood Ducks in the immediate foreground.

Wild Turkey Group. Background by Bruce Horsfall. Birds by H. C. Denslow. — A pair of old birds with their brood of young, in an opening in a forest in the mountains of West Virginia.

Florida Great Blue Heron. Background by Bruce Horsfall. Birds by H. C. Denslow. — A group of adult birds and half-grown young in the tree-tops of a Florida heronry, with characteristic surroundings.

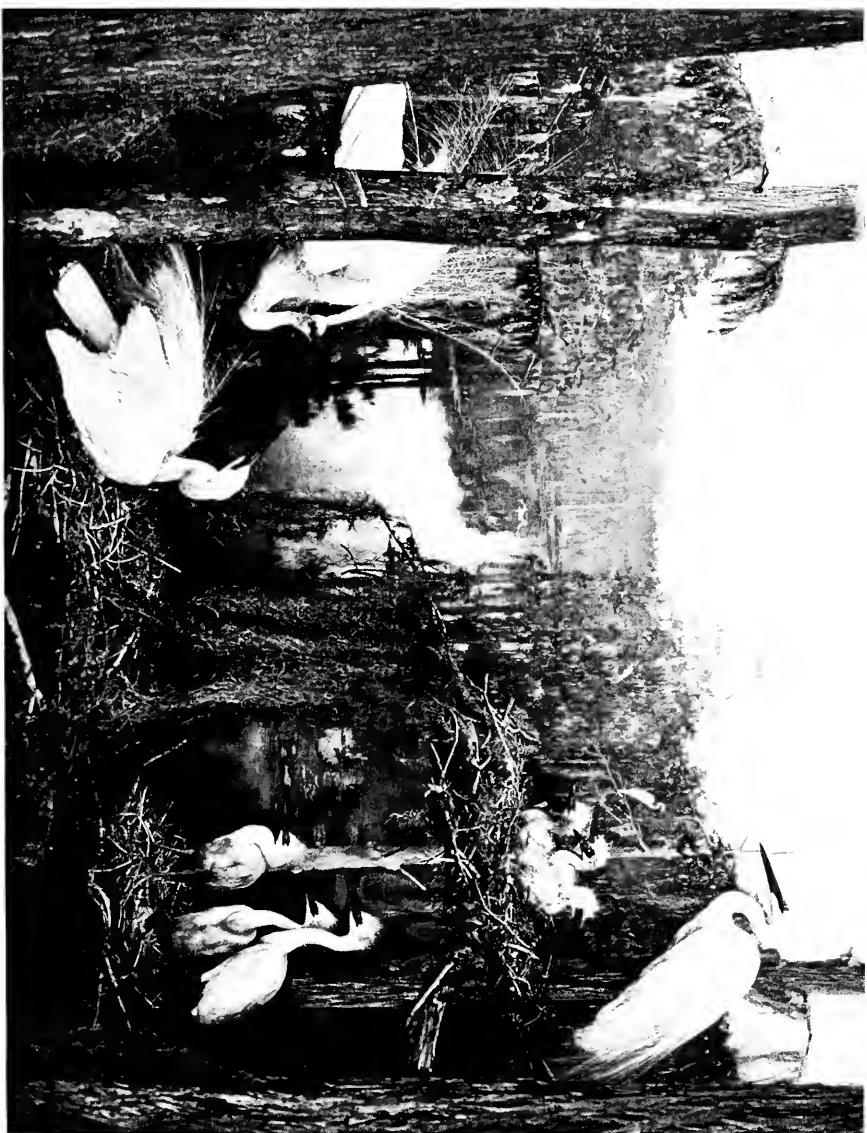
The Anhinga or Water Turkey. Background by Bruce Horsfall. — Nests with eggs, nests with young birds at different stages of growth, and several old birds of both sexes, with one swimming submerged in the foreground. The scene is a lake nearly enclosed with cypress and palmettoes, with a distant vista showing the characteristic scenery of the lake region near St. Lucie, Florida. 'Bonnets' (yellow pond-lilies) give color to the immediate foreground.

Sandhill Crane Group. Background by Bruce Horsfall. Birds by Herbert Lang. — A pair of birds, with their nest and eggs, in a water-filled depression on the Kissimmee Prairies, Florida; background, a broad view of the prairies; hammocks and palm trees in the distance.



DUCK HAWK ON THE PALISADES.





THE AMERICAN EGRET IN A SOUTH CAROLINA CYPRESS SWAMP.



Brown Pelican, Pelican Island, Florida. Background by Bruce Horsfall. Birds by E. W. Smith.—A large group, containing seven old birds, nine young in various stages of growth, and several nests with eggs, some placed on the ground, others in mangrove bushes. It illustrates the manner in which the young are fed with predigested food. The background shows numerous birds in the distance, in various positions, some of them sitting on their nests, others walking on the sandy beach or swimming in the water. The view is toward the low mainland shore, with palm trees as a prominent feature of the distant landscape.

The American Egret in a South Carolina Cypress Swamp. Background by Bruce Horsfall. Birds by Herbert Lang.—Several old birds in fine feather, with nests containing young in various stages of development, in moss-draped trees at a height of forty feet from the ground. The sketches for the landscape were made from the trees at this altitude, to secure the desired effect. A creek in the midview gives an opportunity for water and forest effects, which include Egrets perched in the nearer trees.

A Cactus Desert and its Bird-life. Background by Bruce Horsfall. Birds by H. C. Denslow.—The locality is near Tucson, Arizona. The birds introduced—about 50 specimens, representing 20 species—are those characteristic of a desert environment, and include the Western Mockingbird, Palmer Thrasher, Cactus Wren, Road-runner, Gambel and Scaled Quails, three species of Doves, the Texas Nighthawk, Vermilion Flycatcher, Arizona Crested Flycatcher, Gilded Flicker, Arizona Cardinal, House Finch, Black-throated Sparrow, Verdin, Phainopepla, and Plumbeous Gnat-catcher. The vegetation comprises a number of the most striking forms of cacti, with mesquites and acacias. The background is a typical desert scene, with the beautiful Santa Catalina Mountains in the distance.

California Condor Group. Background by Carlos Hittell.—The site is in Piru Cañon, Ventura County, California, and affords an opportunity for striking scenic effects in the background. The Condor is represented by a lone bird and a single egg.

Brandt Cormorant Group. Background by Carlos Hittell. Birds by Herbert Lang.—An assemblage of six adult birds, a nest with eggs, and three broods of young in different stages of growth.

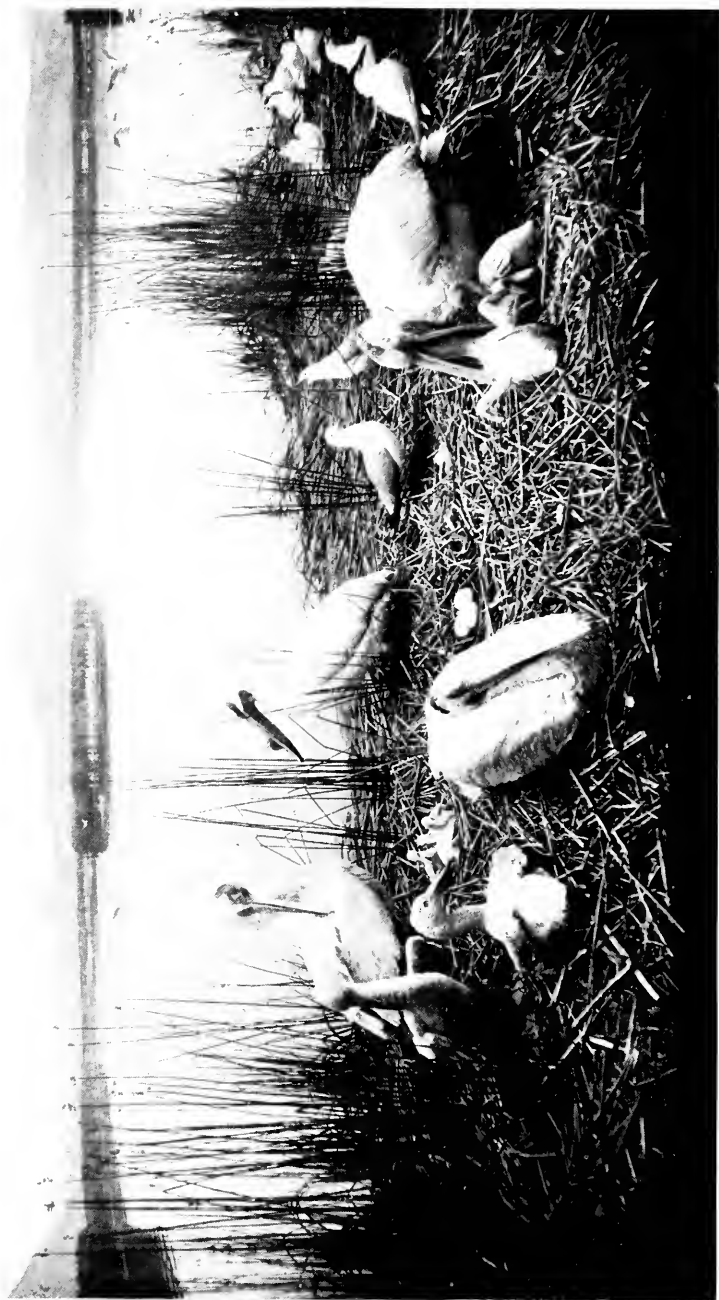
The scene is a rocky islet off the coast of Monterey, California, a portion of which is here reproduced, with an ocean view for a background.

Summer Bird-life of an irrigated portion of the San Joaquin Valley, California. Background by Carlos Hittell. Birds by H. C. Denslow.—As the title implies, the site is an artificially flooded area on the San Joaquin River, which forms a resort for the nesting of a considerable variety of wading and swimming birds. The 15 species represented in the group, which has an area of 8 by 20 feet, include Avocets, Stilts, Killdeer Plovers, Black and Forster Terns, Black-crowned Night Herons, White-faced Glossy Ibises, Coots, Mallards, Cinnamon Teals, Pintail Ducks, Ruddy Ducks, and Fulvous Tree Ducks. The pools of water and aquatic plants merge effectively into the background. The view is westward, over marshes and fields, to the Coast Range, prominent in the distance.

A Flamingo Colony in the Bahamas. Background by L. A. Fuertes (birds) and Carlos Hittell (landscape). Birds by Herbert Lang.—Scene, a key in the Bahamas; theme, a Flamingo city. The size of the group is 8 by 20 feet, in which are placed 16 old birds, and 18 young birds of different ages, interspersed among a dozen or more of the close-set, raised mud nests and small mangrove bushes, so arranged that birds, nests and mangroves merge imperceptibly into the background of an immense colony of Flamingoes, the whole representing, with wonderful realism, an actual "Flamingo city." The pink color and the outlines of the birds gradually fade out in the distance. The sea and a distant green islet studded with palms form the horizon line, while a long file of flying birds stretching across the sky illustrates the manner of flight of these great ungainly but beautifully tinted creatures. The great variety of positions given to the birds are from photographs from life.

Boobies and Man-o'-War Birds. Background by Bruce Horsfall. Birds by Herbert Lang.—The locality is Cay Verde, a coral islet in the Bahamas, some two hundred and thirty miles southeast of Nassau. The common West Indian Booby and the graceful Man-o'-War Bird are well-represented by both young and adult birds, the former species nesting on the ground, the latter in dense growths of bushes ('sea-grape') and cactuses. The inflated





A KLAMATH LAKE BIRD COLONY.

throat-pouch, of a vivid red color, gives a grotesque effect to the otherwise somber colored male Man-o'-War Bird. The background shows a portion of the key, with its peculiar vegetation, combined with a sea view of unusual interest.

Golden Eagle Group.—The scene is in the badlands of Bate's Hole, Wyoming; the nest is on a shelf of a high cliff. A fine old bird and two eggs represent the species, with a striking badlands background of buttes and gorges.

A Klamath Lake Bird Colony. Background by Carlos Hittell. Birds by Herbert Lang.—Klamath Lake, on the California-Oregon boundary line, is a vast expanse of shallow water, broadly bordered with tulés and rushes, and studded with low small islets covered with vegetation similar to that of the shores. It is thus a favorite breeding resort for a great variety of water birds, among which are the White Pelican, the California and Ring-billed Gulls, Caspian Tern, Farallone Cormorant, Great Blue and Black-crowned Night Herons, Wild Geese, the Bufflehead and other species of Ducks. The birds shown in the group are the White Pelican (old birds and young, nests and eggs), the Western Gull, Caspian Tern (numerous individuals of each), and the Farallone Cormorant. The scene is a tulé island, with similar small islands in the immediate background, treeless hills beyond, and snow-capped, grand Mount Shasta in the distance.

Arctic-Alpine Bird-life in the Canadian Rockies. Background by Carl Rungius, from a sketch by L. A. Fuertes.—Scene, about fifteen miles north of Laggan, at the Ptarmigan Lakes. The birds represented are the White-tailed Ptarmigan and American Pipit (with nests and eggs of each species), and the Rosy Snow Finch or Leucosticte. The background portrays one of the most impressive views in the Canadian Rockies, it including Mounts Redoubt, Temple, Hungabee, Lefroy, and Victoria.

Sage Grouse Group. Background by Carlos Hittell. Birds by Herbert Lang.—Scene, sage-brush plains, Medicine Bow, Wyoming. Two old males and a female, in characteristic attitudes, and eggs; others are shown in the nearer portion of the sage-brush background; Elk Mountain and the Snowy Range in the distance.

Love-making of the Prairie Hen. Background by Bruce Horsfall. Birds by H. C. Denslow.—Seven old birds, the males attitudinizing,

the neck-tufts erect and the large orange-colored air-sacks inflated. Scene, prairies of western Nebraska, with an effective landscape.

Wild Goose Group. Background by Hobart Nichols. Birds by Herbert Lang.—At Crane Lake, Saskatchewan, near the line of the Canadian Pacific Railway, where water birds, both swimming and wading, assemble in great numbers to pass the nesting season. The site shown is the grassy border of the lake, with the lake and distant hills in the background. The group consists of a single pair of old birds and their brood of seven young, in a foreground of grass and coarse plants.

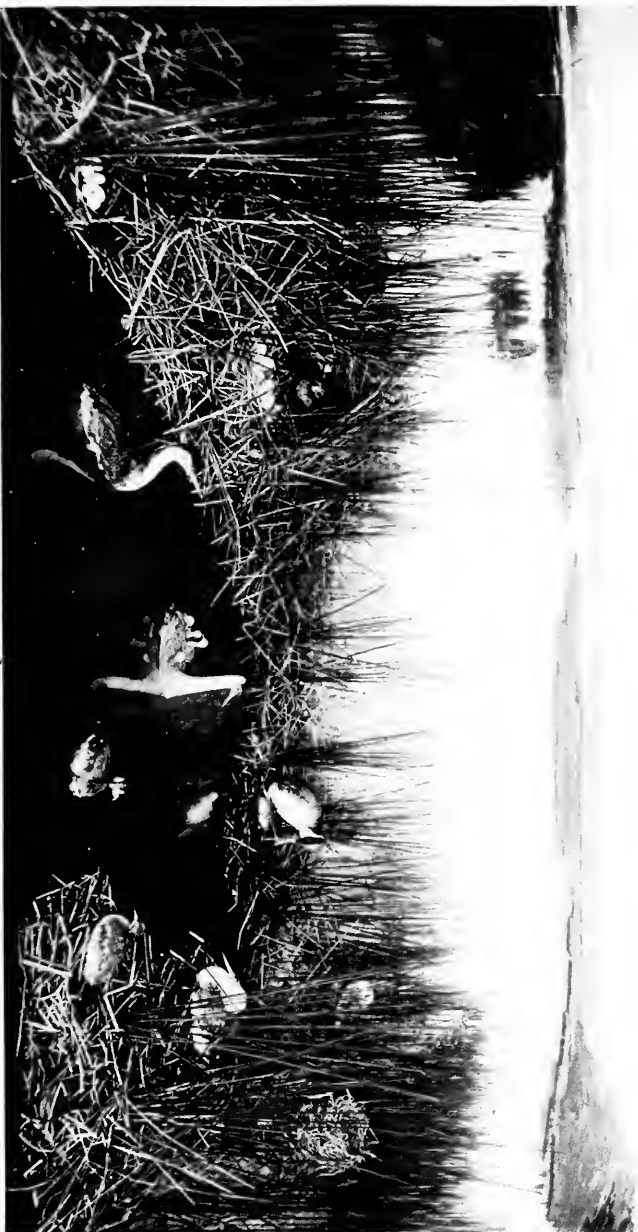
Grebe Group. Background by Hobart Nichols. Birds by Herbert Lang.—The studies here represented were also made at Crane Lake. The species are the Western Grebe and the Eared Grebe, several birds of each being shown, with nests of eggs and young birds. A female Redhead Duck, with her nest full of eggs, is introduced at the rear left corner. The site chosen is a grassy slough, with the lake and its numerous islets as a background.

Bird Rock Group. Birds by H. C. Denslow.—This is a realistic representation of a section of Bird Rock, in the Gulf of St. Lawrence, the long-famous breeding resort of the sea birds of that region. The group contains 73 birds, illustrating seven species. It was the first of the present series of large bird groups to be installed, and has already been described in this journal.¹ It is the only one of the series without a panoramic background, the cliff-like character of the group precluding such treatment.

In addition to the series of groups above described, another is nearly completed, representing a section of the famous Cuthbert Rookery in southern Florida, illustrating the habits of the Roseate Spoonbill, White Ibis, Snowy and American Egrets, Louisiana and Little Blue Herons. Among others planned to complete the series are groups illustrating the Turkey Buzzard, Whooping Crane, Loon, and Eider Duck, which will each afford the occasion for the introduction of additional scenic types in the backgrounds.

The production of this series of habitat groups has been a serious undertaking. It was work, in many ways, in new lines, where difficulties of many kinds were to be overcome, both in the field

¹ Auk, XX, 1903, p. 247.



GREBE GROUP.

and in the laboratory. The large degree of success that has attended the enterprise is due to the foresight, good judgment and enthusiasm of Mr. Frank M. Chapman, who during the last ten years has spent much of his time in gathering this unique material and superintending its preparation. Each group has been the product of a special expedition, the aggregate amount of travel entailed being estimated at about 65,000 miles. On all of the later expeditions Mr. Chapman took with him an artist and a preparator, and on all occasions the camera has played an essential part.¹ It has thus been possible to pose the birds in the groups after photographs of the living bird, unconscious of observation, taken from points of concealment devised to meet the occasion. The backgrounds have been painted, in nearly every case, by artists who have accompanied Mr. Chapman on these expeditions and have thus been able to paint the actual scene from nature which the groups illustrate.

In the foregoing list of the groups credit is given, in most instances, to both artist and preparator for their respective shares in the production of the groups,—the backgrounds and the mounted birds. The vegetation, however, forms an important element in their effectiveness, it having been reproduced in facsimile in wax, either from plaster casts of the parts represented or direct from the parts themselves. This feature of the work has been done under the direction of Mr. J. D. Figgins, Chief of the Department of Preparation at the Museum, and who has often accompanied the expeditions and taken charge of the plants and other field materials necessary to the perfection of the groups.

Difficulties were also encountered in the installation of the groups, in order to secure proper lighting and effectiveness of exhibition. In large plate glass case fronts, everything directly in range is reflected in the glass, to the more or less obscuration of the contents of the case. Experiments to overcome this effect were instituted by the Director of the Museum, Dr. Hermon C. Bumpus, and largely through his resourcefulness this difficulty, and others in the way of lighting the groups, have been effectively overcome. To quote

¹ See Mr. Chapman's recent book, 'Camps and Cruises of an Ornithologist,' where his field work during these expeditions is recounted, and where hundreds of his photographs are reproduced.

from Mr. Chapman's 'Guide Leaflet,' already cited: "Each group has demanded its own special treatment, and, in the construction of the series, the many novel problems encountered have resulted in the development of original methods. This is particularly true of the manner of installation and illumination of the groups at the sides of the hall The background is curved [convex backward] with the front opening so reduced in size that at the proper distance, or 'correct view-point,' neither the ends nor the top of the group can be seen. By thus leaving the actual limits of the group to the imagination the illusion of space and distance is greatly heightened." Furthermore, the groups are lighted from the top by diffused light; electric lighting is employed at night, or whenever the daylight is insufficient, but in either case the light comes from the same diffusing surface. The reflection of outside objects in the case fronts has been wholly prevented by the erection of a screen consisting of a low wooden partition placed at the inner edge of the gallery which serves not only to cut off reflections but tends to concentrate the attention of the observer upon the special and thus wholly isolated exhibit before him.

It is needless to say that the cost of this unique series of bird groups has been heavy, and the work could never have been undertaken by the Museum on the basis of its ordinary sources of income. It is therefore fitting to close this sketch with a list of the names of the friends of the Museum who have made these results possible, as follows:

Mr. JOHN L. CADWALADER.

Mrs. MORRIS K. JESUP.

Mrs. PHILIP SCHUYLER.

Mrs. JOHN B. TREVOR.

Mrs. ROBERT WINTHROP.

Mr. F. AUGUSTUS SCHERMERHORN.

Mr. H. B. HOLLINS.

Mr. HENRY CLAY PIERCE.

Mr. HENRY W. POOR.

Mr. COURTENAY BRANDRETH.

SOMETHING MORE ABOUT BLACK DUCKS.

BY WILLIAM BREWSTER.

THE 'Fourteenth Supplement to the American Ornithologists' Union Check-List of North American Birds,' published in a recent number of 'The Auk,'¹ contains the following announcement (p. 361):—"The name *Anas obscura* Gmelin, 1788, proves to be preoccupied by *Anas obscura* Pontoppidan, 1763, for an Old World species, and no other name being available, *rubripes* of Brewster is adopted as a substitute. (Richmond, MS.) There is some question as to the validity of the form recognized as No. 133a [*i. e.*, *Anas obscura rubripes*] which, by the above action, is now cancelled."

I am told that the closing sentence of the passage just quoted has been very generally understood to imply that, in the opinion of the A. O. U. Committee, it is no longer desirable to recognize more than one northern form of the Black Duck. Its wording would certainly seem to justify such an interpretation, especially as "133a, *Anas obscura rubripes* Brewster" is mentioned elsewhere in this same supplement (p. 352) in a list of "Eliminations," with the remark that it is "equivalent to No. 133," *i. e.*, to *Anas obscura* of the Check-List. As a matter of fact, however, the status of *rubripes* has not been passed on, nor even, I think, reconsidered, by the Committee since the form was accepted as a valid subspecies and given a place in our Check-List. I make this statement advisedly, after confirming my personal recollection of the history of the case by questioning the chairman of the Committee, Dr. Allen, and the Secretary, Dr. Richmond, regarding it. Dr. Allen writes me (under date of December 21, 1908) that "the Committee simply took *rubripes* as the only available name for the Black Duck group, without ruling on the status of *rubripes* as a subspecies of *obscura*, leaving a name for the Green-legged Black Duck to be provided for, presumably by you." I have heard from Dr. Richmond, also, to the effect that no action has been taken at any recent meeting of the Committee respecting the status of the form *rubripes*.

¹ Vol. XXV, No. 3, July, 1908, pp. 343-399.

It is truly deplorable that the Black Duck of our New England and Middle States, the *Anas obscura* of Gmelin, should have to relinquish the appropriate and familiar name which it has borne unchanged, and unaccompanied by a single synonym, for more than one hundred years. There is no other alternative, however, at least from the view point of ornithologists who take Linnæus at 1758 instead of 1766 and who also subscribe to the maxim "Once a synonym always a synonym." Since the unfortunate bird is now left without any specific scientific title I propose that it be hereafter known as *tristis*, partly because of its subdued coloring but also to commemorate the sad fate it has been called upon to suffer at the hands of authorities on nomenclature. If this name be not preoccupied in Anatidæ (one can never be absolutely sure in respect to such a matter), the two more northern forms of the Black Duck group will stand, respectively, as follows:—

Anas rubripes Brewster. RED-LEGGED BLACK DUCK.

Anas rubripes tristis Brewster. BLACK DUCK.

It must be admitted that it seems very like adding insult to injury to thus relegate it to a subordinate place in the group where it has long stood at the very head, a bird which has just been robbed of an ancestral and time-honored name. Nor does this arrangement meet with the approval of all my scientific friends. Two of those whom I have consulted about it—both eminent zoölogists for whose opinion on such a matter I have the highest respect—hold that as the *Anas obscura* of Gmelin was, as far as we know, the first form of Black Duck to be recognized and described by ornithologists it should continue to be regarded as the original or "parent" form and that *rubripes*, which has been separated from it only very recently, should bear the trinomial appellation and take second place. This view appeals to me strongly. Indeed, it seems so logical and so obviously based on sound scientific principle that I have been tempted to adopt and act on it. But there is a practical consideration entitled, evidently, to still greater weight which Mr. Witmer Stone has expressed in the following words, contained in a letter that he has just written me:—"The whole thing comes down to a realization of the fact that we cannot represent more than one thing in our technical nomenclature and that is the *earliest name* for the form according to our Code. Evolution and history have

to be looked after in some other way." In other words the question is not so much one of principle — scientific or otherwise — as of expediency and of accepted usage. It will not do for those of us who have tacitly agreed to abide by the rules laid down in our Code, to disregard them when, as must occasionally happen, they run counter to our personal convictions or preferences. Canon XXIX of the Code (Canon XXV of the revised edition) provides that "when a species is separated into subspecies, or when species previously supposed to be distinct are found to intergrade, the earliest name applied to any form of the group shall be the specific name of the whole group." In the Black Duck group, as represented by its two more northern-ranging forms, we have now two names, and two only, to consider, *rubripes* 1902 and *tristis* 1909. As *rubripes* is clearly the earlier of the two it must become the specific name for this portion of the group. With *obscura* we have nothing further to do since it cannot again be used for any North American Duck in the genus *Anas*.

Under happier auspices I should have welcomed the chance of suggesting a name for the Black Duck. To have won the right to do so by being the first ornithologist to differentiate and describe so fine a bird would have been just cause for honest pride. But merely to replace a long-established name by a new and hence unfamiliar one is but an empty honor, in which I take no satisfaction. Indeed, I should not have cared to meddle in the matter at all had it not been for the purpose of correcting the misapprehension that has arisen respecting the present attitude of the Committee with regard to *rubripes*. For this form I am in a way responsible — as its original describer. I believe too strongly that it is a good subspecies to be willing to have it neglected or overlooked because of any confusion or misunderstanding due to the somewhat changed application of its name. That the characters which I have ascribed to it are presented by great numbers of specimens, and that with many of these they are so pronounced as to be easily recognized at gun-shot distance in living birds — especially when seen on wing — no one at all familiar with them seems able to deny. But there are a few ornithologists and sportsmen, I understand, who maintain — or at least suspect — that they are age or sexual characteristics, having no racial significance. Among these men,

apparently, is Dr. Townsend, who, in the 'Birds of Essex County, Massachusetts'¹ has much of interest to say about *rubripes*. His testimony impresses me as being confirmatory, in the main, of the conclusions which I have reached regarding this form, although to his mind it seems to have a somewhat opposite bearing. While avoiding any definite expressions of belief he suggests "for the sake of argument, that *rubripes* is merely the adult male of *obscura*." I was inclined at first to entertain this theory but it was promptly discarded when the opportunity (mentioned² in connection with my original description of *rubripes*) occurred of comparing the skins of six fully mature, breeding Black Ducks (in the Collection of Mr. Batchelder) from Newfoundland with four from regions bordering on Hudson Bay. For I found that all the Newfoundland specimens were essentially typical of the form then known as *obscura*, although one of them was an adult male, whereas the other four birds were equally good representatives of the form that I named *rubripes*, although two of them were females. In view of these facts (to which Dr. Townsend does not allude), and of the apparent absence of any counter evidence of a similarly definite kind, I feel justified in maintaining that at present there would seem to be no good reasons for doubting that the large Black Duck with coral red legs, bright yellow bill and spotted throat, which I have called *rubripes*, is subspecifically distinct from the bird hitherto known as *obscura*. Nor am I likely to relinquish this conviction until it has been shown to be untenable. If this is ever accomplished it must be either by observation of living birds, reared in confinement from their early youth to full maturity, or by further study and comparison of specimens collected at the height of the breeding season in definitely known localities. For the examination of any number of Black Ducks of miscellaneous and uncertain ages, shot in autumn and winter in regions where they assemble and intermingle at this time of year after having migrated from unknown summer haunts, is unlikely to ever prove anything conclusively beyond the fact — which I have freely admitted from the first — that *rubripes* and *tristis* intergrade. Were it not so they would be distinct species, which I have neither asserted nor believed.

¹ Memoirs Nutt. Orn. Club III, 1905, pp. 125-128.

² Auk, XIX, April, 1902, p. 187.

Just as eels are said to have become reconciled to being skinned alive, so most ornithologists are learning, I suspect, to regard with resignation or indifference, not unmingled with disgust, the ever-increasing and apparently quite hopeless instability of their technical nomenclature. Fortunately there are the English names of birds to which one may turn with blessed sense of relief because of their comparatively fixed and stable character. For they have changed but little since the days of Wilson and Audubon, although purists have not failed to suggest that they should be critically looked into and perhaps extensively emended. Heaven forbid that this ever come to pass! It would mean universal chaos in ornithological nomenclature. Surely we have enough of trial and tribulation to bear with this ceaseless tinkering of the scientific names. They stand, of course, on a different basis from the others, being governed by a complicated system of laws and traditions to which we have so bound ourselves that we must support and enforce them unflinchingly, though the skies fall. For this state of affairs, indeed, there would seem to be no help despite the nomenclatural tragedies which continue to follow one another in dreary and endless succession. Among these there has perhaps been no recent case sadder to contemplate than that afforded by the Black Ducks. Nor is the rearrangement of names in this group which I have just proposed certain to prove final. It might be overthrown, for example, by the discovery that the Florida Duck or the Mottled Duck intergrades with one or the other of the two more northern forms. If this possibility should ever develop into an established fact it would become necessary to treat three of these birds as subspecies of the fourth which would be the Florida Duck, *Anas fulvigula*, for its name dates back to 1874, and hence is older than those of any of the others.

NEW RECORDS AND IMPORTANT RANGE EXTENSIONS OF COLORADO BIRDS.

BY MERRITT CARY, U. S. BIOLOGICAL SURVEY.

THE notes relative to distribution of Colorado birds gathered for the Biological Survey during the field seasons of 1905-06-07, in connection with work on the life zones of that State, contain important geographical or vertical extensions of the known ranges of at least 34 species and subspecies. Moreover, two other species have been found for the first time within the State.

At the request of Dr. C. Hart Merriam, chief of the Biological Survey, these are now placed on record.

***Mergus serrator*.** RED-BREASTED MERGANSER.—A mounted specimen was seen in the Estes drug store at La Veta in May, 1907. Mr. E. W. Scott, the owner, stated that it had been shot on a reservoir near the town.

***Egretta candidissima*.** SNOWY HERON.—Although occasionally reported from both sides of the mountains, the following two specimens seem worth recording. While in the White River region in 1906 I learned on reliable authority that a Snowy Heron had been killed near White River P. O. the previous summer, being afterward mounted at Meeker. A mounted specimen seen in the Estes drug store at La Veta in May, 1907, is said to have been killed in that vicinity. The altitude of La Veta, 7000 feet, is exceptionally high for this species.

***Helodromas solitarius cinnamomeus*.** WESTERN SOLITARY SANDPIPER.—A pair seen on Deer Creek, 10 miles north of Kremmling, Middle Park, July 13, 1905, may have been on their breeding grounds.

***Bartramia longicauda*.** BARTRAMIAN SANDPIPER.—This plover is possibly of more general occurrence in western Colorado than has been supposed. Migrating birds were heard at our camp on Bear River, south of Lay, Routt County, the night of August 6, 1905, and others were heard in migration at Meeker on several occasions between August 9 and 14, usually after nightfall. Two were also seen on a meadow near Meeker, August 12.

A lone Bartramian Sandpiper seen August 9, 1907, on a timothy stubble at the head of Smith Fork, in the West Elk Mountains, apparently had become separated from a flock of migrating birds, as it was bewildered, and remarkably tame. The altitude was unusual for *Bartramia*, being over 7000 feet, while the record is the most southwestern for the State.

***Lophortyx californicus*.** CALIFORNIA PARTRIDGE.—From Grand Junction, where first introduced, this quail has spread up the Gunnison Valley at least to Hotchkiss, where it was found in abundance in August, 1907.

Also introduced successfully at Mancos, and spreading to quite an extent in Montezuma County. One was seen among the piñons two miles south of Dolores, June 25, 1907, by Mr. Ress Philips of the U. S. Forest Service.

Tympanuchus pallidicinctus. LESSER PRAIRIE HEN.—The few Prairie Chickens reported in the sandhills of southeastern Baca County, between Springfield and the Cimarron River, should be *pallidicinctus*. Unfortunately, while in this region in November, 1907, I was unable to secure specimens.

Pediceetes phasianellus columbianus. COLUMBIAN SHARP-TAILED GROUSE.—A specimen of *columbianus* taken near Hahn's Peak in August, 1906, proves quite conclusively the identity of the Sharp-tailed Grouse of northwestern Colorado, and suggests also the probability that all the grouse west of the Continental Divide are this form rather than *campestris*. These grouse were tolerably common in the sage parks between Hahn's Peak and Slater, in both Canadian and Transition zones. Several family parties were encountered, the young being nearly two-thirds grown on August 15.

In 1907, Sharp-tailed Grouse were reported tolerably common on both the northern and southern slopes of the San Miguel Mountains, and in the Lone Mesa region of Dolores County, chiefly above the piñon belt. I flushed one at 9000 feet in the open, park-like country three miles southeast of Lone Mesa, June 27, and another in the oak country eight miles south of Norwood, San Miguel County, July 27. On the slopes of Lone Cone the breeding range is in the partially open oak and aspen country between 8000 and 9500 feet. According to Mr. C. H. Smith of Coventry, it is only during the severest winter months that Sharp-tailed Grouse occur as low as 6500 feet. These grouse were also reported the same year from the upper part of the yellow pine belt near Pagosa Springs, and a very few from the scattered sage parks lying between the McElmo Cañon, Montezuma County, and the Abajo Mountains, Utah.

The known southwestern range of *columbianus* is thus considerably extended.

Otus flammeola. FLAMMULATED SCREECH OWL.—A mounted specimen of this rare little owl was seen in a taxidermist's establishment at Glenwood Springs in August, 1905, but its source could not be ascertained.

Geococcyx californianus. ROAD-RUNNER.—Abundant in the cedar country of northwestern Baca County, a male specimen being collected at Gaume's Ranch in November, 1907. The northeastern limit of range is at the Rhinehart Stage Station, 22 miles south of Lamar on the Lamar-Springfield stage line, at which point Road-runners are said to be seen occasionally.

Aëronautes melanoleucus. WHITE-THROATED SWIFT.—Henderson mentions the occurrence of this species at Pawnee Buttes, in northeastern Weld County, which is the most northeastern record for Colorado. I have, however, found it in abundance at Sheep Mountain, Big Bad Lands, South Dakota, September 2, 1905, apparently at the limit of its dispersion to the northeast.

Tyrannus tyrannus. KINGBIRD.—Not uncommon in northwestern Colorado, at least during migration. Noted as follows: Meeker, early August, 1905; Dixon, Wyoming, August 22, 1906; Snake River, 20 miles west of Baggs Crossing, August 22 to 27, 1906; 7 miles west of Rifle, August 14, 1907; Edwards Sheep Camp, east of Sunny Peak, Routt County, August 28, 1906. This last is the most western record in Colorado.

Aphelocoma woodhousei. WOODHOUSE JAY.—Troops of Woodhouse Jays were often encountered in the dense growth of cedars (*Juniperus monosperma*) near Gaume's Ranch, in extreme northwestern Baca County, November 26 to 29, 1907, and it seems likely that they winter in that region. This is the most eastern Colorado record.

Cyanocephalus cyanocephalus. PIÑON JAY.—Tolerably common in the rough cedar country of northwestern Baca County, November 26 to 29, 1907. Not known to breed, and probably present only as a winter resident.

Astragalinus psaltria. ARKANSAS GOLDFINCH.—North in western Colorado to Meeker and Steamboat Springs, at which localities it was common early in August, 1905.

Junco aikeni. WHITE-WINGED JUNCO.—Although the commonest junco in the mountains in winter, *aikeni* has not been found in Colorado, heretofore, in the breeding season. During the first few days of June, 1905, I saw several of these juncos in the foothills a few miles west of Boulder, at altitudes varying from 6000 to 7000 feet. On June 11, Mr. Walter Blanchard of Boulder showed me a nest containing young, from which the female was flushed and satisfactorily identified, though unfortunately not secured. This was in the upper part of the yellow pine belt a mile north-east of Magnolia, at an elevation of approximately 7000 feet.

In fall migration *aikeni* extends eastward in the rough cedar country of southeastern Colorado nearly to the Kansas line, a large flock being seen November 27, 1907, at Gaume's Ranch, in Shell Rock Cañon, northwestern Baca County.

Junco hyemalis montanus. MONTANA JUNCO.—In Colorado this is one of the most widely distributed juncos in winter. An extreme eastern record is Gaume's Ranch, northwestern Baca County, where several were seen and one collected on November 27, 1907.

Melospiza georgiana. SWAMP SPARROW.—One taken October 23, 1907, on the Medano Springs Ranch, in the San Luis Valley, 15 miles northeast of Mosca, is the first record west of the mountains, and the second time the Swamp Sparrow has been found in the State. The specimen was caught in a trap set for mice on the edge of a tulé marsh.

Pipilo fuscus mesoleucus. CAÑON TOWHEE.—Occurs commonly in Upper Sonoran zone in all of the region lying south of the Arkansas River and east of the Sangre de Cristo Range, except on the treeless plains of southern Prowers and eastern Baca counties. Very abundant in Shell Rock Cañon, northwestern Baca County, November 26 to 29, 1907, two specimens being collected at Gaume's Ranch; also noted at Caddoa Station,

in the Arkansas Valley west of Lamar, November 30. Gaume's Ranch is very near the eastern limit of its dispersion in Colorado, while Caddoa represents the extreme northeastern limit of *mesoleucus* in the United States.

***Calamospiza melanocorys*.** LARK BUNTING.—A belated migrant was noted a few miles east of Saguache, in the San Luis Valley, November 7, 1907.

***Progne subis*.** PURPLE MARTIN.—Unusually high records for the martin are: White River Plateau (25 miles southeast of Meeker) between 8000 and 9000 feet—several seen the middle of August, 1905; and Uncompahgre Butte, on the Uncompahgre Plateau—one noted at 9000 feet, July 16, 1907.

***Lanius borealis*.** NORTHERN SHRIKE.—One seen from a Santa Fé train at Earl, Las Animas County, November 25, 1907, and several a few days later at Gaume's Ranch, in the northwest corner of Baca County. These localities indicate a southward dispersion in winter nearly if not quite to the southern line of the State.

***Lanivireo solitarius cassini*.** CASSIN VIREO.—A specimen was collected September 4, 1906, at Douglas Spring, in the cedar belt at the north base of the Escalante Hills, western Routt County, and two more were heard at the same locality on September 6. A large vireo, presumably *cassini*, was also seen among the piñons at Coventry, Montrose County, in July, 1907.

***Dendroica graciae*.** GRACE WARBLER.—Tolerably common in the yellow pine forests of Archuleta County, on the headwaters of the San Juan River, at about 7000 feet, a specimen being taken at Pagosa Springs, May 28, 1907. A very active warbler, almost continually in motion, appearing in nervous haste to catch the small insects which infest the terminal bunches of pine needles.

***Dendroica nigrescens*.** BLACK-THROATED GRAY WARBLER.—This warbler extends north in the cedar and piñon country of western Colorado to the Escalante Hills, western Routt County, where several were seen at Douglas Spring, September 4 to 8, 1906. In 1907—Mesa Verde, Montezuma County (7000 feet), common June 14; Sinbad Valley, southwestern Mesa County, common in July; Coventry, a few during July and an immature specimen collected July 25.

***Dendroica townsendi*.** TOWNSEND WARBLER.—A male shot August 24, 1906, on Snake River, 20 miles west of Baggs Crossing, was on its southward migration with a large company of Pileolated and Yellow Warblers.

***Geothlypis trichas occidentalis*.** WESTERN YELLOW-THROAT.—One was seen July 12, 1905, in a willow copse along Grand River, 5 miles east of Sulphur Springs, Middle Park. The elevation, nearly 8000 feet, is exceptionally high for the Yellow-throat.

***Setophaga ruticilla*.** REDSTART.—A few migrating individuals were noted in a large company of Pileolated Warblers on the lower Snake River, 20 miles west of Baggs Crossing, August 25 to 27, 1906.

Catherpes mexicanus conspersus. CAÑON WREN.—Noted at various points in western Colorado in 1906–07, chiefly south of the Grand River Valley. North (sparingly) to the lower White River Valley, indicated by one which was heard among the rock ledges 20 miles east of Rangely, September 12, 1906. The most eastern Colorado record for the cañon wren is Gaume's Ranch, northwest Baca County, where a specimen was collected in Shell Rock Cañon, November 27, 1907. Mr. E. J. Gaume states that this wren is a regular breeder in the cliffs near his ranch. The above locality is also important as marking the eastern limit of *conspersus* north of Texas.

Thryomanes bewicki bairdi. BAIRD WREN.—A not uncommon summer resident in the piñon and cedar country of western Colorado. The northernmost record for the State is Elk Springs, on the piñon divide eight miles south of Lily, Routt County, where one was seen September 11, 1906. Two others were noted and one collected southwest of Rangely, Rio Blanco County, on September 17.

Thryomanes bewicki cryptus. TEXAN WREN.—A Bewick Wren was seen among the cedars on the south rim of Shell Rock Cañon, near Gaume's Ranch, Baca County, November 27, 1907. Though the specimen was not secured, it undoubtedly belonged to this recently separated plains race, rather than to *bairdi* of the mountain region, and is thus the first Colorado record for *cryptus*.

Cistothorus stellaris. SHORT-BILLED MARSH WREN.—One shot October 23, 1907, in a rank growth of marsh grass on the Medano Springs Ranch, 15 miles northeast of Mosca, is not only the first record for *stellaris* in the San Luis Valley, and west of the mountains, but also for the State. Another individual was seen in a neighboring tulé marsh the following day, in company with a large number of tulé wrens. Although the San Luis Valley is far removed from the known range of *stellaris*, it seems not unlikely that thorough work in the tulé marshes lying along the west base of the Sangre de Cristo Range may reveal it as an occasional summer resident.

Sitta pygmæa. PYGMY NUTHATCH.—Noted July 14, 1907, among the yellow pines at the head of Dominguez Creek, on the northern end of the Uncompahgre Plateau,—altitude about 8000 feet. The first Mesa County record for *pygmæa*.

Bæolophus inornatus griseus. GRAY TITMOUSE.—At a number of points in the Upper Sonoran zone of western Colorado in 1906–07, chiefly below 7000 feet. North to the Escalante Hills of Routt County, where common September 4 to 8, 1906 — a specimen being taken September 4.

Psaltiriparus plumbeus. LEAD-COLORED BUSH-TIT.—The following localities indicate a wide distribution in the cedar and piñon country of western and southwestern Colorado: Escalante Hills, flock of 30 near Douglas Spring, September 4, 1906, two collected; Coventry, small flock, July, 1907; Mesa Verde, 25 miles southwest of Mancos, small flock, June 14, 1907, at 7000 feet; Arboles, small flock, June 8, 1907.

Polioptila cærulea obscura. WESTERN GNATCATCHER.—Not known

from north of Grand Junction, and breeding only in the hottest desert valleys. Tolerably common and one taken among the cedars in dry gulches along the McElmo Cañon, Montezuma County, in June, 1907, and again in July among oak thickets in Sinbad Valley and along Dolores River, in southwestern Mesa County. One also seen May 21, 1907, at Walsenburg, east of the mountains.

Myadestes townsendi. TOWNSEND SOLITAIRE.— A nest containing four partially incubated eggs, found July 27, 1906, at 6200 feet in the foothills a few miles southwest of Arkins, Larimer County, was nearly 2000 feet lower than the normal breeding range of the Solitaire in Colorado. The writer has, however, found this species breeding at considerably below 5000 feet in the Pine Ridge region of northwest Nebraska.¹

Solitaires were abundant in the cedar country of northwest Baca County, November 26 to 29, 1907, where they doubtless winter.

Sialia mexicana bairdi. CHESTNUT-BACKED BLUEBIRD.— One seen in July, 1907, near Uncompahgre Butte, on the Uncompahgre Plateau, at 9000 feet, is the first record of *bairdi* in Mesa County.

Sialia currucoides. MOUNTAIN BLUEBIRD.— Common at Springfield and Gaume's Ranch, Baca County, November 25 to 29, 1907, where reported wintering.

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A Recent Instance of the Occurrence of the White Pelican (*Pelecanus erythrorhynchos*) in Massachusetts.— I have an adult male White Pelican, in full nuptial plumage with well-developed 'centre-board,' which Dr. Lombard C. Jones of Malden, Massachusetts, was kind enough to secure for me some four years ago, soon after it had been skinned and mounted by Robert Bazin, a Malden taxidermist. It was taken at Sandwich, Massachusetts, possibly on the 12th, but almost certainly on the 13th, of May, 1905, by George W. Kuntz (or Kounze) of Sandwich. He gave it to Eugene Haines (also of Sandwich and familiarly known to Dr. Jones) who sent it in the flesh to Dr. Jones by whom it was received on May 17 and immediately placed in the hands of the taxidermist already mentioned. I bought it a week or two later from Mr. Haines, through Dr. Jones, and it was deposited in my collection on May 31, while the skin was still 'green' and enshrouded in its winding of cotton thread. Mr. Haines reported that Mr. Kuntz (or Kounze) had found the bird lying dead among some beach grass whence he traced its large footprints backward across the beach to the water's edge; here it must either have alighted or — as is perhaps more probable —

¹ See Proc. Nebr. Ornith. Union, II, 1901, 79; also *ibid.*, III, 1902, 73.

swam ashore, before seeking the slight shelter afforded by the spot which came so near being its final resting place. These data are all attested by letters and other memoranda received by my assistant, Mr. Walter Deane, in May and June, 1905, from Dr. Jones, who appears to have had most of his information from Mr. Haines. There is a newspaper clipping, however, pasted in one of the letters and inscribed (evidently by Mr. Deane) "Boston Post, 1905," which reads as follows: — "Pelican found at Sandwich. Sandwich, May 17.— A strange sight was witnessed here on Friday, when a large pelican was found on the beach here by Mr. Kounze, who gave it to Eugene Haines. It measured 8 feet from tip to tip of its strong wings. Its bill was over 18 inches long, and the pouch underneath would hold two or three gallons. Whether it followed some other birds from its far-away home, or whether it was blown towards these shores in a hurricane, none can tell. Mr. Haines will have it mounted and placed on exhibition."

This brief note is, as far as I am able to learn, the only published record that has hitherto appeared of the bird to which it relates. It will be observed that the name of the man who found the Pelican was here printed "Kounze," not "Kuntz," as it is written by Dr. Jones; while it is necessary to point out further that the "Friday" immediately preceding May 17, 1905, fell, according to the calendar for that year, on May 12, instead of on the 13th, which Dr. Jones regards as the correct date. As he is careful to express doubt in one of his letters concerning the accuracy of his spelling of the name, that given by the Sandwich correspondent of the 'Post' is perhaps to be preferred; but with respect to the date, Dr. Jones is, without question, the better authority of the two. He has just written me (February 23, 1909): "I am sure you will make no mistake in accepting the data which I obtained at the time, in accordance with the request of Mr. Deane, for I certainly fixed the date then as accurately as possible....and the evidence I obtained was from Mr. Haines to whom the bird was given by the finder." — WILLIAM BREWSTER, *Cambridge, Mass.*

The European Widgeon in Rhode Island.— Almost any large collection of birds is likely to yield occasional surprises in the way of rarities which have been previously misidentified or overlooked. An instance of this happened only a few weeks ago when I found in my series of American Widgeon a peculiarly colored specimen, labeled *Anas americana*, which I do not remember to have ever noticed before. My record books show that it was purchased, with a number of other birds, in 1896, from Mr. Edward Sturtevant of Newport, Rhode Island, and that one of my assistants catalogued and relabeled it with the others, possibly when I was absent from Cambridge. Its original label, still attached to the skin, reads as follows:— "♂ *Dafila acuta*, 22, Rhode Island, Middletown 20 Sep. 1889. Taken by Edward Sturtevant, Collection of Edward Sturtevant." My assistant wrote in the Catalogue, between quotation marks:— "This is the only one I ever saw in this locality (salt marshes between 2d and 3d Beaches)." I am unable to

trace this statement to its source but it must have originated with Mr. Sturtevant and it may have been taken from one of his letters, afterwards destroyed.

In Millais's admirable 'Natural History of the British Surface Feeding Ducks' I find a figure (No. 3, Plate XVII) of an "immature male" European Widgeon, "coming out of the eclipse plumage into winter dress, age 16 months." Males of this age and condition somewhat resemble the females, from which they may easily be distinguished, however, by the presence of conspicuous grayish mottling on the scapulars and by a large white patch on the wing. From fully adult males in corresponding dress they differ, according to Millais, only in having the white on the wing somewhat less pure and widespread. Judged by this test my Rhode Island specimen is evidently mature, for the white on its wings is immaculate and of nearly maximum extent. In respect to every other detail of color and marking the bird agrees almost perfectly with the representation of the European Widgeon to which I have just called attention. In his text relating to the American Widgeon (which has been taken a few times in Great Britain) Millais says (on page 57):—"The old male in eclipse plumage more closely resembles the female of his own species than our drake Wigeon—his flanks are very grey-brown, and not that rich, red-brown colour seen in our bird." The female, also, is described by him as differing from that of the European species in a similar way, having "not so much red-brown on the flanks and breast."

Although it is not always safe to rely largely on plates and descriptions, however accurate, when identifying obscurely characterized birds, the evidence just given is sufficient, in my opinion, to warrant a rather positive reference of the Widgeon taken by Mr. Sturtevant at Middletown, Rhode Island, to *Mareca penelope*, of which, indeed, it seems to be a nearly typical representative. It is, I believe, the first European Wigeon known to have been obtained in New England. The second (hitherto supposed to have been the first) was shot in Monponsett Pond near Halifax, Massachusetts, on October 20, 1899. When I referred to the latter in 'The Auk'¹ as a "fine old male in remarkably handsome plumage, I had not seen Millais's book which, indeed, was not published until the following year. On reëxamining this specimen in the light of his testimony, I find that I was not mistaken in regarding it as mature; for its wings closely resemble those of the Wigeon killed by Mr. Sturtevant although in most other respects it is very unlike his bird owing to the fact that it is in full winter plumage. It came into my possession not long after it was recorded in 'The Auk.' Soon after this I secured the remains of a third European Widgeon to which Dr. Townsend has alluded in the following words.² "There is in Mr. William Brewster's collection the head and one wing of an

¹ Auk, XVIII, No. 2, April 1901, p. 125.

² C. W. Townsend, Birds of Essex County, Massachusetts, Memoirs Nutt. Orn. Club, III, 1905, p. 129.

adult male of this species shot at Marblehead on December 29th, 1900." This statement is not quite correct for I have *both* wings of the Marblehead bird and they indicate plainly that it was not more than six or seven months old when killed, being essentially like those of a female Widgeon and wholly without the white patches which, according to Millais, are sometimes shown by the male soon after the close of his first winter and invariably assumed by him before the end of his second autumn; after which he never lacks them at any season,—even when masquerading, for a brief time in late summer, in the subdued garb so generally like that of his mate and so appropriately termed his "eclipse" plumage.—WILLIAM BREWSTER, *Cambridge, Mass.*

Snow Geese in Massachusetts.—The seaboard of eastern Massachusetts was once visited regularly by considerable numbers of Snow Geese, if we may credit the testimony of certain early Colonial writers. Thus Wood, referring to the region about Lynn and to a period extending from 1629 to 1633, says they came "in great flockes about Michelmas" and after remaining six weeks, filed "to the Southward, returning in March and staying six weeks more" before continuing their spring migration northward. Just when they discontinued this practise is not definitely known but it was probably abandoned long before the beginning of the Nineteenth Century. During the past fifty years or more they seem to have occurred only at infrequent intervals and, as a rule, singly, although Dr. Townsend reports¹ that as lately as November, 1903, Mr. W. H. Vivian "saw a flock of about fifty white birds resting on the beach at Ipswich" Massachusetts. "He thought at first they were gulls, but they got up and flew off honking and he saw that they were white geese."

In view of some of the facts just mentioned I was not less surprised than interested to learn that Mr. M. Abbott Frazar had seen a large flock of Snow Geese at Townsend, Massachusetts, on April 13, 1908. He has written me two letters concerning them, from which, with his kind permission, I now make the following extracts, changing or transposing a word or two here or there:—

"I heard the geese making a tremendous noise in the distance and soon caught sight of them about a mile away, coming towards me and flying in a compact bunch, not in V-shape. They were all calling and acting as if lost or badly scared. They passed directly over my head not seventy yards up. There were at least seventy-five and more likely one hundred in the flock, . . . and all were in full plumage. I looked them over carefully to make sure there were no Canadas in the lot and there was not a gray bird of any kind. I could not be in doubt about this for they had not passed my house over four hundred yards when they swung so that the light shone on them making them look like a snow bank in which a dark bird would

¹ C. W. Townsend, Birds of Essex County, Massachusetts, Mem. Nutt. Orn. Club, No. III, p. 147.

have been conspicuous. They approached me from the southwest, flying about northeast, and then swung around by the west finally disappearing over the point where I first saw them, after making a circle perhaps a mile in circumference. There is a small river, hardly more than fifty yards in width at the widest, just beyond where I lost sight of them. The nearest pond I know of is three miles away."

Inasmuch as Mr. Frazar is an ornithologist and sportsman of long and varied experience one may accept, without the slightest hesitation, his confident assurance that the birds he observed, under conditions so favorable for field identification, were Snow Geese. It must remain doubtful, however, to which form of this species they belonged, although the probabilities indicate the smaller bird *hyperborea*, that being of commoner occurrence in New England than its larger subspecies, *nivalis*.—WILLIAM BREWSTER, *Cambridge, Mass.*

Another Ohio record for *Oidemia deglandi*.—Among a number of birds which I recently received from the Ohio State University in exchange for my collection of mammals there is a female of this species (*Oidemia deglandi*), shot March 10, 1881, at the Licking County Reservoir in Ohio. Prof. L. Jones, in his Catalogue, mentions the two specimens recorded by Dr. Wheaton and two specimens in the Oberlin Museum. Dawson and I recorded a fifth specimen shot in 1881 in Sandusky Bay. This present specimen then makes the sixth record for the State of Ohio. As Dawson had the collection of the Ohio State University at his elbow when writing his book, it is certainly peculiar that he should have overlooked this specimen and there may be perhaps other specimens in this collection not yet brought to light.—W. F. HENNINGER, *New Bremen, Ohio.*

The Masked Duck — A Correction.—In 'The Auk,' Vol. XXV, No. 4, page 472, will be found a note by me on the capture of a Masked Duck (*Nomonyx dominicus*) in Chatham Co., Ga., on Oct. 5, 1906. The capture was reported to me by Mr. G. R. Rossignol, Jr. (in whose possession it was) and Prof. W. J. Hoxie, another Savannah ornithologist and I had full faith in the judgment of these gentlemen. However, since writing said note I have visited Savannah and had the pleasure of examining the collections of each and was both surprised and disappointed to find that they were mistaken in this specimen. It is, without doubt, a Lesser Scaup, and they were misled by rust colored stains on its breast and belly.

While these have every appearance of being caused by grease, Prof. Hoxie is now of the opinion that it is from some compound of iron in the water frequented by the bird, as he states that he has since observed it in a less degree on other specimens. I deeply regret that the error was made and my note written.—ISAAC F. ARNOW, *St. Marys, Ga.*

The Little Blue Heron in New Jersey.—In glancing over the January issue of 'The Auk,' I noticed Mr. Reginald Heber Howe's note on the occurrence of the Little Blue Heron in New Jersey and the question he raised

as to whether this influx of birds was attributable to excessively hot weather. To this I would say emphatically, no. The Egret, it is true, is now a very rare species in either Pennsylvania or New Jersey but the Little Blue Heron invades both States periodically during late summer. Though personally I have seen but few birds, yet records have come to me with great regularity of their occurrence during the last four years at numerous localities in widely separated parts of New Jersey (barring the mountains), while in Pennsylvania they are even taken occasionally in the Alleghanies. At certain periods in late August they may even be called abundant. It would seem that each year after the breeding season they wander north, usually in flocks, and spend August and the first half of September on northern feeding grounds.—R. C. HARLOW, *State College, Pa.*

The Yellow Rail at Salem, New Jersey.—I have recently secured from a Mr. McKee of Philadelphia a mounted specimen of the Yellow Rail, with full data, which Mr. McKee took at Salem, New Jersey, on October 24, 1908. The bird is an adult female in fine plumage but very poorly prepared. This is the most recent capture of the Yellow Rail in the State and the fourth record for the State.—R. C. HARLOW, *State College, Pa.*

The Black Rail (*Creciscus jamaicensis*) in the District of Columbia.—Through the courtesy of Mr. H. M. Darling, of Washington, D. C., the Biological Survey has recently received a specimen of the little Black Rail (*Creciscus jamaicensis*), collected on the Eastern Branch of the Potomac, September 1, 1908. The specimen is adult, mounted, but with the sex unmarked. At least three earlier records of the occurrence of this species in the District of Columbia have been published. In September, 1861, the bird was reported as seen by Coues and Prentiss.¹ On June 6, 1879, a male (No. 78,384, U. S. National Museum) was collected by Shekells near Washington²; and on May 29, 1891, a specimen was taken by R. L. Jones and recorded by E. J. Brown.³ The specimen collected by Mr. Darling is apparently the third actually captured, and the fourth record for Washington.

The Black Rail has also been taken by John Dowell at Piscataway, Prince George County, Maryland, Sept. 25, 1877 (No. 97,717, U. S. National Museum),² and several specimens are said to have been taken on the Patuxent River in Maryland, not far from the northeastern boundary of the District.—T. S. PALMER, *Washington, D. C.*

Occurrence of the Whimbrel (*Numenius phaeopus*) off the coast of Nova Scotia.—In October, 1907, I secured an adult female specimen of this small European Curlew which has an interesting history. On May 23, 1906, it came aboard the steamship 'Bostonian' when she was westward

¹ Avifauna Columbiana, p. 101, 1883.

² Auk, Vol. XXIV, p. 209, 1907.

³ Ornithologist and Oölogist, Vol. XVI, p. 108, 1891.

bound and not far to the southward of Sable Island, Nova Scotia or, to quote the manuscript record literally, in "Lat. about 43° N., and Long. 60° W." "There had been a northeast gale for five days," which perhaps accounts for the occurrence of the bird so far to the westward. For two days previous to its capture it had been seen following the steamer. When it sought refuge on her decks it was utterly exhausted and very much emaciated, being, indeed, "nothing but skin and bones." "The men on board tried" to revive it "with food (probably corn beef and hard tack) . . . but it died a short time before the steamer reached port." Her Second Officer, S. A. Cornwell by name, took it in the flesh to D. B. Mackie of Malden, Massachusetts, by whom it was skinned, sexed and mounted and from whom I afterwards purchased it, through the kind offices of Dr. Lombard C. Jones, also of Malden. I am further indebted to the latter gentleman for the above data, all of which I have compiled from letters written by him to Mr. Walter Deane in 1907, and from one addressed to me personally, that has come within the past week.

It would perhaps be not wholly unreasonable to maintain that the record just given entitles the Whimbrel to a place in New England lists; for the bird to which it relates had apparently flown unaided to within six hundred miles of the sea coast of New Hampshire, in about the latitude of Portsmouth, and similar instances of "casual occurrences" have been accepted on no better evidence than this. In any case the specimen furnishes a definite and perfectly satisfactory North American record of a European species which, if I am not mistaken in my recollection, has been found previously on this side of the Atlantic only in Greenland, where it is said to have been taken a dozen times or more.—WILLIAM BREWSTER, *Cambridge, Mass.*

Wild Turkey (*Meleagris gallopavo*).—Mr. Rudolph Borchardt, the pioneer taxidermist of Denver, informs me that in the fall of 1868 he killed three Wild Turkeys, out of a flock of twenty-five or thirty, in the oak brush in what is known as the Oak Hills, about 6 miles above the mouth of Plum Creek, which empties into the Platte River, south of Denver. The remaining members of the flock were, one by one, killed by the Indians. These birds had frequented this locality for two or three years previous. He states also that these were the last and only Wild Turkeys that he ever heard of within a good many miles of Denver.—A. H. FELGER, *Denver, Colo.*

Capture of a Bald Eagle near Chicago, Ill.—On January 10, 1909, we shot an immature Bald Eagle (*Haliaeetus leucocephalus*) on the shore of Lake Michigan at Glencoe, Illinois. The bird was flying low over the ice that piles up along the beach.—THORNE C. TAYLOR, HUBBARD WOODS, and WALTER T. FISHER, *Chicago, Ill.*

The Prairie Falcon (*Falco mexicanus*) in **Western Minnesota**.—A specimen of this falcon was taken Sept. 11, 1894, in Traverse County, Minnesota,

by Dr. Wm. de la Barre of Minneapolis. The locality is in the extreme western part of Minnesota close to the Dakota line and lies within the Coteaux region of the State where the fauna and flora are strongly colored by species and subspecies characteristic of the plains region farther west. The specimen is now No. 3484 in the collection of the Minnesota Natural History Survey. It was recently examined by Dr. A. K. Fisher and the identification verified. As far as known this is the first well authenticated record of the occurrence of this species in Minnesota, the only previous record being by G. G. Cantwell (O. & O., Vol. XVI, Oct., 1891, p. 157) reporting the somewhat doubtful and unverified capture of a specimen in the winter of 1890-91 in Swift County, western Minnesota.—THOS. S. ROBERTS, *Minneapolis, Minn.*

Agelaius phoeniceus fortis in Louisiana.—In a series of six Redwings taken at Belcher, Louisiana, February 4, 1908, was one specimen (♀) referable to this subspecies — the others being *A. p. phoeniceus*. This is the first record of the Giant Redwing in the State. The specimen in question was originally recorded¹ as *A. p. arctolegus* on the authority of H. C. Oberholser who, after going over the whole group again in greater detail, now decides that this bird should be referred to *fortis*.—ARTHUR H. HOWELL, *Washington, D. C.*

Pine Siskins and Winter Bobolinks.—The water front of Private Claims 120 and 321, City of Detroit, is a point of land reaching out into Lake St. Clair. The shore is lined with summer cottages behind which is a belt of weed-grown solid ground, about 100 yards in width, and then a marsh belt, about as wide, which brings you to the solid mainland. Between the marsh and mainland is a canal, the excavation from which forms an embankment some seven feet high with a row of Lombard poplars on the top. Near the westerly end the embankment runs out into the marsh and thence, at right angles, returns to the mainland leaving a strip of marsh, 20 × 100 yards, between the embankment and mainland that affords ample shelter from the lake winds and a food supply for the seed-eaters in the abundance of weeds growing along the sloping embankment. A number of times, during the last eighteen years, I have seen small flocks of Pine Siskins (*Spinus pinus*) migrating northward in this vicinity during March. It was not until the autumn of 1908 that I decided to secure a specimen and directed my attention to this point as the most promising locality. November 8 was the date set for the first visit and a better could not have been selected. Mr. Herbert H. Spicer and the writer spent two hours on the embankment opposite the piece of sheltered marsh and directly on the flight line of the Pine Siskins. They came from about 25 degrees east of north in flocks of from three to a hundred or more indi-

¹ Proc. Biol. Soc. Washington, XXI, p. 121, 1908. Of the identity of the specimen of *arctolegus* recorded from Natchitoches there is no question.

viduals, and at intervals of about ten minutes between each flock. When the lake was reached they rose higher and continued their journey without a pause, except one large flock that broke in confusion and swung back to the weeds on the mainland but joined the next flock a few minutes later. November 15 the flight had ceased and only one flock of 23 birds was seen. They were in the weeds back of the cottages and refused to be driven away. They were gone on the 22d, and from that date to the present writing, January 12, only one to four individuals have been noted on any one day, and none of these were migrating. When the Redpolls reach here from the north they are content to remain, and I fail to understand why the bulk of Siskins go further south, as local food conditions are in every way favorable.

While observing the flight of Siskins, November 8, we saw a bird perched on a willow bush in the sheltered marsh and secured it. The report of the gun caused another to take flight which was also secured. They were Bobolinks (*Dolichonyx oryzivorus*), and dissection disclosed the fact that both were females and very fat. We then carefully beat over this marsh, together with the larger open marsh, but could find no more. November 15 and 22 we again unsuccessfully explored this section, but secured a male December 6 within a few yards of where the other two were taken. This bird must have arrived after November 22, for it seems impossible that he could have been there and escape detection. He was much emaciated and healed gunshot wounds were discovered in breast and wing. We went over this ground again December 13 without success. December 20 we were returning from the point when the characteristic call note of a Bobolink directed our attention to the bird passing overhead and making for the point. It was followed and taken. It turned out to be a male and in fine condition, being very fat. A careful examination failed to reveal the slightest trace of a previous injury; nevertheless I believe that temporary impairment of flight by gunners during the period of migration explains the presence of all four birds. The most interesting fact in connection with the two latter birds was their ability to endure 18° below freezing, for the mercury dropped to that point prior to December 6. I supposed the Bobolink to be of somewhat delicate constitution with reference to low temperature, as normally it arrives late in spring and departs early in autumn; but the above birds not only withstood the cold but in a thinly feathered and poorly protected condition. Examining the specimens for other points of interest I find that black feathers show on the throat, neck, flanks, thighs and across breast on the December 6 bird but are confined to sides of breast, flanks and thighs on the December 20 specimen, which seems to be a bird of the year. The general color of the underparts is buffy white on the former and buffy olive on the latter, and all the black feathers are edged with these colors, and this may indicate the beginning of the spring transformation.— J. CLAIRE WOOD, *Detroit, Michigan.*

Evening Grosbeaks again in Massachusetts.— Mr. M. Abbott Frazar has kindly given me permission to report the fact that, on the morning of February 7, 1909, he met with a small flock of Evening Grosbeaks at Townsend, Massachusetts. He was returning from a walk when he started the birds from the ground where they had been feeding on the fallen fruit of a rock maple that stands within twenty feet of the front steps of his farm house. They flew across the road to a smaller maple in which they alighted and remained for several minutes, allowing him to approach them closely and to obtain a good view of them. There were about ten of them, all in the plumage of the female. Their next flight was to the top of a tall pine some two hundred yards further off. Here they stayed a somewhat shorter time, before taking wing again, to disappear in the far distance. Mr. Frazar had been away from Townsend for four days before the date above mentioned. He was told that during his absence the Grosbeaks had been seen repeatedly by a man who works on his place. They have not since returned to it as far as he can learn. He was constantly on the watch for them during the remainder of his stay at Townsend, which terminated on the morning of February 11, when he came back to Boston. Not long after this he received and forwarded to me two letters written by a man living in South Sudbury, Massachusetts, who claims that his "door yard" was visited on February 14th, and again on the 15th, 1909, by three Evening Grosbeaks, two of which were males.

If I remember rightly, Evening Grosbeaks are known to have occurred in eastern Massachusetts on but two occasions prior to these; in 1890 when they appeared in considerable numbers, at many different localities, in January, February, and March; and on March 23, 1904, when five were found together in Beverly and three of them killed, by Mr. C. E. Brown.¹— WILLIAM BREWSTER, *Cambridge, Mass.*

The Cardinal at Ipswich, Mass.— Last week a friend of mine at Ipswich wrote me that for the past two or three weeks there had been a beautiful strange bird which had been coming into his door-yard for food. The one that he described was practically red all over with a very bright crest on his head. At my earliest opportunity I visited the farm to find that when the bird came at noon he was a beautiful Cardinal. He has been there about a month up to the present writing and comes regularly to the door-yard for seeds and bread crumbs which are put out for the birds each day. He keeps very close to the house practically the entire time, living in some very thick clumps of spruce trees not far away. He has gradually become very tame so that he will come to within a few feet of the people who are feeding him. On the coldest mornings when the thermometer has registered in the vicinity of zero his disposition has been of the most cheerful, seeming to mind the cold not in the least and jumping about very actively, even coming to the window and calling for the food if it has not been put out in time for him.

¹ Auk, Vol. XXI, July, 1904, p. 385.

There are a number of Myrtle Warblers, a few Song Sparrows and Chickadees nearby and which occasionally alight in the trees which he seems to consider as his especial property. This apparently troubles him not a little and he usually drives the intruders away after watching them for a minute or two.

I thought this item might be of interest, as the Cardinal is almost never recorded in New England, and in the course of twenty years of bird study in this vicinity I have never had the fortune to meet with one before.—FRANK A. BROWN, *Beverly, Mass.*

Dendroica discolor and Dendroica vigorsii in Eastern Massachusetts in Winter.—January 2, 1909, I shot a Prairie Warbler at South Yarmouth, Mass. The bird was on a dead pine that had fallen to the beach from the sand bluffs and was probably in company with several Myrtle Warblers that were in the vicinity. Unfortunately the bird was so badly mutilated that I did not save it. Mr. F. H. Kennard was with me at the time, and the next day in the same town saw at close range another bird of the same species. This bird was among a mixed flock of Pine and Myrtle Warblers, Red-breasted Nuthatches, Kinglets and Chickadees.

There were somewhere between 25 and 50 Pine Warblers in this flock, in both adult and first winter plumage.—F. B. McKECHNIE, *Ponkapog, Mass.*

The Carolina Wren at New Haven, Conn.—The Carolina Wren (*Thryothorus ludovicianus*) was reported as a rare resident at New Haven from about 1901 to 1904, but so far as I am able to ascertain none have been seen here since the severe winter of 1905-06 until December, 1908. On the 25th of December, Mr. A. W. Honywill, Jr., saw one of these birds in Edgewood Park. Four days later, on the 29th, I was attracted by the loud song of a Carolina Wren and succeeded in positively identifying two individuals. These birds were in the same locality as the one seen on the 25th. On January 2, 1909, I took a Carolina Wren only a few hundred yards from the above mentioned Park, thus absolutely proving the presence of the birds in this locality.—CLIFFORD H. PANGBURN, *New Haven, Conn.*

Breeding of the Louisiana Water-Thrush in Philadelphia.—The status of the Louisiana Water-Thrush (*Seiurus motacilla*) in Pennsylvania is, to say the least, peculiar. Common in the southwestern counties, it grows scarcer in the east, and though found regularly in the valley of the Susquehanna, and even in company with *S. noveboracensis* on the tops of the Alleghanies, the general opinion of our ornithologists seems to be that it is one of the rarest breeders in the southeastern area. For many years this idea has prevailed and it is with the hope of fixing the correct status of the Louisiana Water-Thrush that this article is written.

Beyond a doubt, the bird is rare within the counties of Delaware, Chester, Bucks and Montgomery, but in Philadelphia it would seem to claim a place as a regular summer resident—at least in the Wissahickon Valley.

During the period between 1885-1890 the late Harry K. Jamison did a vast amount of field work in this territory and in his note books (now in the author's possession) I find records of the finding of two nests and the observation of many birds. And even prior to this time at least two sets were taken there by a collector named Preble. In 1904, Mr. Chas H. Rodgers records in 'The Auk' his observations of a pair which evidently had young at this locality.

These seem to constitute the only breeding records of this species prior to the year 1908, when I decided to investigate the region in search of the birds. With this object in view I made several trips to the Wissahickon Valley in Fairmount Park and observed Water-Thrushes each time. On May 26, several were seen, and again on June 7, full-fledged young of at least two pairs were noted in company with the parents. At my suggestion my friend R. F. Miller searched through the region several times in late June and July and on every trip observed Water-Thrushes. On summing up the birds noted, we estimated that at least five pairs bred along the creek within a stretch of three miles.

In view of these data it would seem that though undoubtedly rare in the surrounding country, the Louisiana Water-Thrush may now claim, and probably always could claim, a place among the regular summer residents of the County of Philadelphia.—RICHARD C. HARLOW, *Pennsylvania State College*.

A Spring Record for Bicknell's Thrush on Long Island.—In looking over the series of Gray-cheeked Thrushes in the Brooklyn Institute Museum a few days ago I noticed one specimen that seemed very small. A careful examination showed it to be a typical example of Bicknell's Thrush. It is a male in nuptial plumage and was collected by the writer on the divide north of Jamaica May 22, 1900.—GEO. K. CHERRIE, *Brooklyn, N. Y.*

Albino Robins.—A record of an individual albino of any variety of bird would be of value only as illustrating the fact that albinism, partial or complete, may occur in any avian species: it would, however, be of considerable interest, and of some importance could one follow the varied fortunes and vicissitudes of any given albino bird.

This is denied us through the relative uncommonness of pure albino forms, an uncommonness which seemingly substantiates the idea that all such forms must perish early, probably long before any opportunity to breed and transmit the peculiarity is possible. Consequently any observations on a succession of albinos emanating from the same locality are worthy of record. Hence this record of experiences had during the summer of 1908, concerning albino robins, and of observations communicated to the writer by obliging friends.

Through the courtesy of Mr. A. H. Felger of Denver, the writer is enabled to state that three pure albino robins were seen in City Park, Denver,

during the summer of 1905, all apparently from one nest, and two more in the summer of 1906 in the same place, all being birds of the year. This park is within three blocks of the writer's home; it is well covered by a large variety of trees, has a considerable water supply, and forms an ideal home for many of our summer resident birds.

There is no record that any of these albinos returned to the park during any succeeding year.

A son of one of my neighbors saw a young pure albino robin in the immediate vicinity of my home during the summer of 1907.

On June 3, 1908, the writer received a live young robin, a pure albino, which was one of a brood of four robins (all the others being apparently normal) raised in a neighbor's yard about two hundred feet from the writer's house. A second young pure albino robin was given to the writer six days later (June 9), it having been raised in a nest half a block to the rear of the first albino's nest, and on June 11 (eight days after the receipt of the first), a third young pure albino robin was presented to the writer. This last one was found about the premises of Mrs. Ernest Knaebel, distant about half a mile from the location wherein were found the first two. These birds were all very tame and allowed themselves to be caught without fear or resistance. Everyone was a typical albino, with every feather pure white, and with pink feet, legs, and eyes, and white bill.

If any one of these birds were put in such a position that its head was between a strong light (the sun, or a bright lamp) and the observer, the effect was startling, the eye viewed by the observer shining like a glowing coal. This transillumination through both eyes illustrated strikingly the absence of all pigment in the iris and retina, and showed, too, how nearly opposite are a bird's eyes, and demonstrated that in a young bird the interocular septum (the perpendicular plate of the ethmoid) is cartilaginous, and remarkably translucent.

All of these birds were lively, and soon learned to take worms from the hand. They were all given to Mr. Felger who tried to raise them with the help of a friend experienced in successfully raising other young robins. These three albinos, notwithstanding that they all ate well, died within two or three weeks of capture, of an obscure intestinal disorder. The writer is inclined to believe, through the testimony of friends qualified to speak on the matter, that it is not very difficult to bring up nestling robins by hand, and feels that the failure, in experienced hands, to rear these albinos lends color to the belief that albinos are inherently of weak constitution.

It will be seen from the above that we have to deal with an unbroken series of albino robins observed during four succeeding seasons all in an area not to exceed one mile in diameter.

It seems reasonable to assume that these birds all emanated from a pair, or their descendants, originally and perhaps continually nesting in City Park. The inheritability of albinistic traits is undeniable and it is conceivable that this trait may be cropping out in the succeeding generations

of robins derived from this hypothetical pair in City Park, though most of the later generations may show no albinism at all. Considerable probability is lent to this hypothesis by the fact that the mother of the bird of June 3, 1908, was decidedly *white* on the belly and breast. It came a number of times to feed the albino young one while the young bird was on the writer's premises, and gave ample opportunity to note this variation from the normal. The writer also noted later on during the summer just passed in the same neighborhood two young robins which were nearly gray all over, both showing very little blackish even on the head or back; one of these two birds had the right outer tail feather pure white, and the left one half white. The coming summer will be of more than usual interest in anticipation of seeing about the writer's neighborhood these partial albino birds, or other young pure albinos.

The almost complete absence of pure white species of birds inhabiting dark areas like forests, and the commonness of white forms in bright areas like the sea, or seashore, may be accounted for by detrimental environmental conspicuousness, or by beneficial inconspicuousness, respectively; one might infer from the failure of these six albinos of 1905, 1906, and 1907 to return to the region of origin, that they perished through being conspicuous marks for predaceous birds.

These observations on the three young of 1908 shed no light on the assumption held by some writers that albinos are more apt to be females, because the sex of but one of the three could with certainty be determined; it was a male.—W. H. BERGTOLD, M. D., *Denver, Colo.*

Unusual Dates for some Birds at New Haven, Conn.—White-throated Sparrows have been present in large numbers in Edgewood Park up to date (Jan. 2, 1909). Five Rusty Blackbirds have been in the same Park since December 26. I saw a Fox Sparrow on Dec. 22 and two of them on Jan. 2. On Dec. 22, near Lighthouse Point I saw two Red-winged Blackbirds and about twenty-five White-winged Crossbills. The date cannot be called unusual for the Crossbills, but they are rare here. On Dec. 26 and 28, I saw a male Towhee in Edgewood Park. On Dec. 21, at Mitchell's Hill, I saw a Yellow-bellied Sapsucker, and on Dec. 25, at Saltonstall Ridge, I saw four Red-breasted Nuthatches. Robins and Bluebirds have been seen occasionally, and on Dec. 25 Mr. A. W. Honeywill, Jr., saw a Hermit Thrush at Mitchell's Hill. On the next day Mr. Honeywill and I saw the thrush at the same place. These birds were all positively identified although none of them were taken.—CLIFFORD H. PANGBURN, *New Haven, Conn.*

Unusual Records for Massachusetts.—*Chaetura pelagica*. CHIMNEY SWIFT. I saw three in Sharon, Mass., on Oct. 12, 1907, which is apparently the latest date for the State. One of them flew almost directly overhead, affording perfectly satisfactory identification.

Sayornis phoebe. *PHOEBE.* Saw one in Stoughton on Oct. 31, 1908.

Lanivireo solitarius solitarius. *SOLITARY VIREO.* Saw a singing bird at fairly close range on April 11, 1908, in Stoughton. Saw another singing bird in Sharon on October 12, 1907.

Compsothlypis americana usneæ. *NORTHERN PARULA WARBLER.* Saw one in Stoughton on April 25, 1908, the throat of which lacked the cross-band.

Dendroica pensylvanica. *CHESTNUT-SIDED WARBLER.* Saw a male at very close range on April 28, 1908, in Stoughton.

Dendroica blackburniæ. *BLACKBURNIAN WARBLER.* Saw an elegant male in Sharon on May 31, 1907.—SIDNEY F. BLAKE, *Stoughton, Mass.*

Massachusetts Bird Notes.—Florida cærulea. An immature male in the white plumage was shot in Stoughton, Mass., by a Mr. Berry, Aug. 22, 1908. The bird was mounted by E. R. Adams of Canton, to whom I am indebted for the record, and is now in the collection of F. H. Kennard.

Centurus carolinus. In a collection of birds purchased some time since I found one of this species labelled "♀, Hull, Mass., 1882, W. B. R." (Richardson). The bird is not however a female but evidently a young male.

Empidonax trailli alnorum. Early in the morning of June 8, 1904, I found an Alder Flycatcher singing in a clearing by the roadside within a mile of my home in Ponkapog. Frequent visits convinced me that the bird was breeding, but it was not until the 24th that I found and took the nest with 4 eggs.

The clearing was originally a swampy tract of pine, white cedars and red maple but was chopped over in the winter of 1901-02, resulting in a sprout growth of maples combined with such shrubs as *Comus paniculata*, *Alnus incana*, *Rhus venenata*, *Azalea viscosum*, etc.; the ground being still damp enough to support a growth of sphagnum and skunk cabbage.

The nest was well within the bushy area, 2½ feet up in an *Azalea viscosum* bush, of characteristic composition — dead grass with long loose ends hanging down.

Several times since I have seen Alder Flycatchers in both Canton and Norwood during the breeding season but have not taken the necessary time to find more nests.

Sitta canadensis. From 1900 to 1904 I spent considerable time in a part of Canton that seemed very favorable for birds of the Canadian Fauna. Here was a 50-acre tract of large white pines with adjoining swamp of white cedar and red maple, and considerable large deciduous growth. Numerous plants and shrubs of a northern character grew throughout the area, and I found breeding there such birds as the Barred Owl, Broad-winged Hawk, Hairy Woodpecker, Solitary Vireo, Canadian Warbler, and Brown Creeper.

April 29, 1900, I first saw the Red-breasted Nuthatch here and it seems quite probable that they were breeding; however on May 18, 1902, Mr.

Owen Durfee and I located a pair of the birds on the edge of the pines in a mixed growth of oak and chestnut, about 50 yards from the maple swamp. The female soon went to the nest near the top of a small dead black oak stub 12 feet high. After spending some time watching and photographing the birds I collected the stump with a set of six fresh eggs. At the entrance hole was the characteristic daub of pitch.—F. B. McKECHNIE, *Ponkapog, Mass.*

Three New Records for the State of Washington and One for Oregon.—

The past winter has been by far the most severe of any during my residence of twelve years in the State of Washington, as it has also been throughout the other parts of the Northwest. Consequently a large number of rare visitors — mostly northern birds — appeared in very considerable numbers. I was fortunate enough to obtain the three following species, which form, to the best of my knowledge, new records for the State. They have been very kindly identified for me by Dr. A. K. Fisher and Mr. H. C. Oberholser.

Junco hyemalis hyemalis. SLATE-COLORED JUNCO. An adult male collected in my back garden here in Tacoma on February 4, 1909. It was first seen on January 15, and appeared at intervals until the date when I was finally able to secure it. It was always in company with a large flock of Shufeldt's Juncos (*Junco oreganus shufeldti*), amongst which its duller colors rendered it most conspicuous.

Passerella iliaca insularis. KADIAK FOX SPARROW. An adult female collected in my back garden here in Tacoma on January 13, 1909. What was presumably the same bird was seen during the week previous by other members of my family. The fact that it was exceedingly fat makes this seem all the more probable, as I fed a large flock of birds daily throughout the entire winter.

Passerella iliaca meruloides. An adult female was collected at the town of Kirkland, King County, Washington, on January 11, 1909, by Miss Jennie V. Getty of that place. It was found frozen to death, and was greatly emaciated owing to starvation. Miss Getty very kindly presented it to the writer, and also reported seeing a considerable number of similar birds, as well as several much larger ones with the same characteristics. Miss Getty is a careful and experienced observer, and her notes are entitled to the fullest consideration.

I now take pleasure in giving the following record from southwestern Oregon; identification through the kindness of Dr. A. K. Fisher and Mr. H. C. Oberholser.

Melospiza melodia rufina. SOOTY SONG SPARROW. This bird was taken by my brother, Mr. C. W. Bowles, on September 16, 1907, at Takilma, Josephine County, Oregon. Unfortunately the sexual organs were obliterated but otherwise it is an excellent skin. Unless I am mistaken, this is the most southern point from which this subspecies has yet been recorded.—J. H. BOWLES, *Tacoma, Wash.*

Labrador Notes.—In a box of bird-skins kindly sent me by Dr. W. T. Grenfell from Labrador in November, 1907, the following are worthy of note:

Anas platyrhynchos. MALLARD. A female or young bird taken at Nachvack in October, 1904. This duck breeds west of Hudson Bay, and is a rare transient visitor in northern Labrador.

Dafila acuta. PINTAIL. Adult male, Nachvack, June 1, 1905. This duck is a rare transient visitor in Labrador. Mr. G. M. Allen and I obtained a skin at Hopedale and saw another skin, but were able to find only five other records for Labrador. (Birds of Labrador, Proc. Boston Soc. of Nat. Hist., 1907, p. 328.)

Somateria spectabilis. KING EIDER. A curious specimen in partially albinistic plumage, shot at Battle Harbor, June 19, 1907. The whole bird is creamy white or buff, with irregular brownish patches. The belly is uniformly darker, almost vinaceous in color. The head and neck are finely lined with grayish brown streaks. The rectrices are nearly pure white, as are also the primaries and secondaries. All the feathers, especially those of the wings and tail, are much worn.

Porzana carolina. SORA. An adult taken near Harrington on the southern coast about July, 1907. This is the second record of its occurrence in Labrador. The first was of a specimen taken at Sandwich Bay in 1898. (Birds of Labrador, *loc. cit.*, p. 345.)

Falco islandus. WHITE GYRFALCON.—A very white specimen of this species taken at Nachvack, on October 13, 1905. In this connection it is interesting to note that Mr. Allen and I, who recorded this bird at Henley Harbor on the southern coast on August 2, 1906, (*loc. cit.*, p. 368) have since been told by Dr. Grenfell that a pair of these birds have bred there regularly, and that he remembers seeing them there in 1896.

Colaptes auratus luteus. NORTHERN FLICKER. A male from Sandwich Bay, just south of Hamilton Inlet, August, 1908. Mr. Allen and I concluded that this species was an "uncommon summer resident in southern half of Labrador, occasional as far as Hudson Strait" (*loc. cit.*, p. 377). The specimen is an interesting one as it appears to be somewhat darker than specimens from the New England States.

Dendroica æstiva. YELLOW WARBLER.—From Northwest River, Hamilton Inlet, taken by a cat, September 1, 1905. I hope that Mr. Oberholser will soon report on this interesting specimen.

I would also mention the following specimen kindly sent me in the autumn of 1908, by Mr. John Goleby, a Moravian brother stationed at Hopedale:

Hirundo erythrogaster. BARN SWALLOW, taken at Hopedale in July, 1908. The only previous record for Labrado. is that the bird "breeds at North-west River at the head of Hamilton Inlet" (*loc. cit.*, p. 403).—CHARLES W. TOWNSEND. M. D., Boston, Mass.

RECENT LITERATURE.

Grinnell's 'The Biota of the San Bernardino Mountains.'¹ — During the seasons of 1905, 1906, and 1907, the author devoted considerable time, often aided by several assistants, in investigating the fauna and flora of the San Bernardino Mountains in southern California, which, from their altitude and isolation, offer an attractive field for the study of distribution. The present report of his researches includes a consideration of the life zones of the region; descriptions of the localities visited, with special reference to the faunal complexion of each; a discussion of the bird population and the influences modifying it; a list of the important species of plants, with notes on their distribution; a list of the birds of the region (139 species), with a detailed record of the distribution of each, with biographical and critical notes on many of them; and similar lists of the mammals and reptiles.

The San Bernardino region rises from a base level, on the south side, of from 1500 to 2500 feet, and on the north side of about 4000 feet, to the maxima of 10,600 (San Bernardino Peak) and 11,485 feet (San Gorgonio Peak), and thus includes the life zones from the Lower Sonoran to the Alpine-Arctic. The limits of these several zones are discussed, with lists of the plants that characterize them.

Under the caption 'Bird Population and its Modifying Influences,' the food supply is considered to be the factor that determines the maximum number of birds that can exist in a given region. "Competitive struggle between species has led to the adoption of remote and otherwise unexplainable habitats, temporary or constant. It has also led to the development of various and perfected means of food-getting." In this connection attention is called to the "almost universal exodus in July," from the coastal lowlands of southern California, "of many of the birds of the 'summer-visitant' category which have bred and raised broods during April, May and June." A considerable number of species (which he enumerates) "become scarce, or disappear altogether towards the end of July . . . when everything becomes excessively dry; among plants most annuals have died, and the perennials have ceased active growth; insects become relatively rare, except along watercourses. The May bird population, which is abundant, cannot continue to be supported after this 'winter' [dry] season sets in, and the result is, they must move elsewhere." He has found that they then move up to the mountains, in families of young and old, where the climate is moister, where vegetation still flourishes, and where insects are abundant.

"All this invasion of the higher altitudes occurs when spring and summer

¹ The Biota of the San Bernardino Mountains. By Joseph Grinnell. University of California Publications in Zoology, Vol. V, No. 1, pp. 1-170, pll. i-xxiv. December 31, 1908.

are just dawning there, but when the foothills and plains below are becoming dry and barren under the July heat, no longer productive of the food-supply which they were in a condition to offer earlier in the season. I believe these relative conditions prevail throughout southern California. Without the mountains to accommodate the excess of bird population, which could not be supported in late summer on the withered lowlands, we would have fewer birds in the spring. The 'resident' species return to the lowlands when the cold begins to reduce the food supply in the mountains; and, what is also noteworthy, so do the 'summer visitants,' which thus become transients for a few days in the fall as they pass back through the lowlands on their way south, or rather southeastward. These latter, therefore, undertake three distinct migratory journeys during the year: from their winter habitat northwestward to their spring breeding-place, from the latter up, and often northwards, to their summer feeding-grounds, and then back down and then southeastward to their winter habitat."

These well-attested facts have an interesting and important bearing upon the general subject of bird migration, and especially upon the origin of migration. As said later by Grinnell: "The geometric ratio of reproduction makes the population of a species an elastic quantity, expanding into any favorable food area presenting itself. And the masses of different species press against one another, like soap-bubbles, crowding and jostling as one species acquires, through modification of food-getting powers and perfected adaptability to other conditions, some advantage over another." In this connection is discussed the mortality of birds and its causes, from the standpoint of the author's observations in southern California.

The report on the birds (pp. 50-54), like those on the mammals and reptiles, consist of extensively annotated lists, relating to the habits and local distribution of the species. The illustrations include a colored map (plate i) of the life zones of the region, and a transverse profile, also in color (plate ii), indicates both their vertical and horizontal extent. Most of the remaining twenty-two plates are from photographs, and represent types of vegetation and landscapes.—J. A. A.

Grinnell on Birds of Southeastern Alaska.—"In the spring of 1907 a party was organized and outfitted by Miss Annie M. Alexander, for the purpose of exploiting the fauna of certain islands. The party consisted of Mr. and Mrs. Frank Stephens, Mr. Joseph Dixon, Mr. Charles Littlejohn, and Miss Alexander herself, who headed the expedition." The report on the work accomplished¹ consists of nearly one hundred pages, illustrated with two plates and a few text figures. The introduction and the report on the birds are by Dr. Joseph Grinnell; the 'descriptions of localities' are by Frank Stephens and Joseph Dixon; the report on the

¹ Birds and Mammals of the 1907 Alexander Expedition to Southeastern Alaska. University of California Publications in Zoology, Vol. V, No. 2, pp. 171-264, pll. xxv, xxvi, and text figs. 1-4. February 18, 1909.

mammals is by Edmund Heller. From April 17 till August 9 the entire party was occupied in collecting and exploring at various points on Admiralty, Baranof, and Chichagof Islands, and at Glacier Bay, at which latter date most of the members returned home. Mr. Stephens, however, remained and continued to work in the same region till August 29, and later stopped at Thomas and Helen Bays, between Juneau and Dixon Entrance. The collections included 532 birds, 22 sets of eggs and nests, and 476 mammals, and has been presented by Miss Alexander to the University of California Museum of Vertebrate Zoölogy. A map shows the region traversed, and there are several half-tone scenic illustrations.

The report on the birds, by Dr. Grinnell, records 99 species, of which 81 were represented by specimens, with very full notes based on the field books of the collectors. Two species and four subspecies are described as new, namely: *Lagopus alexandrae*, from Baranof Island; *Lagopus dixonii*, from Chichagof Island; *Buteo borealis alascensis*, from Glacier Bay and Chichagof Island; *Picoides americanus fumipectus*, based on a single specimen from Chichagof Island; *Loxia curvirostris silkensis*, from Admiralty Island; *Planesticus migratorius caurinus*, also from Admiralty Island. The author "still believes that there are two races of the Varied Thrush," in opposition to the recently expressed opinion of Mr. Ridgway. In this belief he is supported by the A. O. U. Committee, which at its last meeting declined to accept its proposed elimination, this decision being based on then recently acquired material (cf. Auk, XXV, July, 1908, p. 398).

The field notes here incorporated contain much interesting information respecting the breeding habits of a number of the species met with, and Dr. Grinnell adds important comment on variations of plumage, based in some instances on large series of specimens (38 skins of the rare Kitilitz Murrelet were obtained). The report is thus an important contribution to Alaskan ornithology.—J. A. A.

Grinnell on Birds observed at Salton Sea.¹—This paper gives observations on about half-a-dozen of the water birds seen, but a future paper on the land birds is promised. The expedition was made in April, 1908, in the interest of the Museum of Vertebrate Zoölogy, at the University of California, of which Dr. Grinnell is curator. On Echo Island, in Salton Sea, was found a large breeding colony of the American White Pelican (*Pelecanus erythrorhynchos*), "the southernmost nesting-colony" of this species. A census of the colony gave a total of "980 occupied nests, besides others in process of construction. At the very minimum there were 2000 pelicans here assembled." A very full account is given of the character of the nests, with photographic illustrations. On the nearby Pelican Island was a breeding colony of Farallone Cormorants, of which 147 nests were

¹ Birds of a Voyage on Salton Sea. By J. Grinnell, Condor, Vol. X, No. 5, Sept.-Oct., 1908, pp. 185-191.

counted that contained eggs, besides many others partly built. This island was formerly — two or three years before — the favorite nesting resort of the pelicans, but at this time only three nests of this species were seen there, the colony having moved to Echo Island. — J. A. A.

Chapman on the Life-Histories of the Booby and Man o'-War Bird.¹—

The observations here recorded were made during April, 1907, at Cay Verde, in the Bahamas, while on a collecting trip to obtain specimens, accessories, photographs, and other data for a 'Habitat Group' of these birds in the American Museum of Natural History. Although only three days and nights were spent at the key, the visit was successful, and forms the basis of the present report on the bird life of Cay Verde. No land birds appear to be resident on the key, but it is visited by a number of migrants, of which nine species were noted, in addition to the same number of water birds. The presence of these birds, says Mr. Chapman, "indicates that Cay Verde would be an admirable station for the study of the migration of birds throughout this region. The small size of the Cay [half a mile long and a fourth of a mile wide] would permit the taking of fairly accurate daily censuses, while the distance from the nearest land makes it the only available stopping-place in a large area. It is to this isolation that the presence of large numbers of breeding birds on the cay may be attributed." The birds accustomed to nest there are three species of tern, the Tropic-Bird, and the two species that form the subject of the present paper. The number of Boobies (*Sula leucogastra*) breeding on the cay was estimated to be about 1500 pairs, with between 200 and 300 pairs of Man-o'-War Birds. At this time most of the nests contained young, ranging in age from newly hatched to half grown, while some nests still contained eggs and some of the young birds were already on the wing.

A detailed account of the habits, nest, eggs and young is given for each species, and also of the development of the plumage in the young birds. Incidentally some errors made by Audubon in his account of these species are noted. It is shown beyond reasonable doubt that the Booby found by Audubon nesting on his "Noddy Island" (Bird Key, Tortugas Islands) and supposed by him to be "*Sula fusca*" (*S. leucogastra*) was really *S. piscator*. The correction of this error gives *Sula piscator* for the first time the status of a former breeding bird in the United States, where it is now only of accidental occurrence. On the other hand, Audubon's record of the breeding of the Man-o'-War Bird in the Florida Keys is discredited. The six plates, based on photographs, illustrate the nesting habits, manner of flight, and development of the plumage in both species. — J. A. A.

¹ A Contribution to the Life-Histories of the Booby (*Sula leucogastra*) and Man-o'-War Bird (*Fregata aquila*). By Frank M. Chapman. Papers from the Tortugas Laboratory of the Carnegie Institution of Washington, Vol. II, 1908 (1909), pp. 139-151, pll. i-vi. [Separates not dated, but distributed late in February, 1909.]

Warren on Birds of Montrose County, Colorado.¹— This is an annotated list of about 115 species, based on observations made by Mr. Warren during the month of April, 1906 and 1908, and notes furnished him by Mr. C. H. Smith, made during the last ten years. Montrose County is in the southwestern part of the State, on the Utah border, and is not well-known ornithologically.— J. A. A.

Sclater on the Winter Birds of Colorado.²— This is a pleasantly written account of winter bird life in the vicinity of Colorado Springs, prepared with a view to its interest for European readers, the author disclaiming that "there is anything original" in it, in the sense, we suppose, of new information. The commoner winter birds of the region are briefly mentioned, this running commentary being followed by nominal lists of the resident birds and winter visitants of El Paso County, Colorado.— J. A. A.

Wetmore's Notes on Some Northern Arizona Birds.³— This is a list of 40 species, based on specimens taken by the author at Williams, Arizona, February 24 to April 1, 1907, with extended and interesting field notes. Among the species recorded are six forms of *Junco*.— J. A. A.

Oberholser's List of Alabama Birds.— The 'First Biennial Report of the Department of Game and Fish of the State of Alabama,' covering the period from February 23, 1907, to September, 1908, contains (pp. 104-110) 'A List of the principal Birds to be found in Alabama,' by Harry C. Oberholser. This is purely a nominal list of 275 species and subspecies, which serves at least to show the author's personal views on various questions of nomenclature in cases where his preference for certain generic and a few specific names differs from that of the A. O. U. Check-List, about thirty instances.— J. A. A.

Oberholser's Revision of the Kingfishers of the Genus *Ramphalcyon*⁴— This revision is based primarily upon specimens collected by Dr. W. L. Abbott, in the East Indies. The range of the genus includes southern Asia, the Philippine Islands, Java, Borneo, Flores, Sumatra, and Sulu Islands. *Pelargopsis* Gloger, formerly employed for the group, is shown to be a *nomen nudum*, and is replaced by *Ramphalcyon* Reichenbach. Two species are recognized,— *R. melanorhynchus*, with three subspecies, and *R. capensis*, with 15 subspecies, of which four are here described as new. Heretofore each of the forms previously recognized has been given, with a single exception, full specific rank.— J. A. A.

¹ Notes on the Birds of southwestern Montrose County, Colorado. By Edward R. Warren. Condor, Vol. XI, No. 1, 1909, pp. 11-17.

² The Winter Birds of Colorado. By W. L. Sclater, Ibis, July, 1908, pp. 443-450.

³ Notes on some northern Arizona Birds. By Alex Wetmore. Kansas University Science Bulletin, Vol. IV, No. 19, September, 1908, pp. 377-388.

⁴ Revision of the Kingfisher Genus *Ramphalcyon* (*Pelargopsis*). By Harry C. Oberholser. Proc. U. S. Nat. Mus., Vol. XXXV, pp. 657-680. Published Feb. 9, 1909.

Van Oort's Avifauna of the Netherlands.¹—The number of species here recorded for the Netherlands is 335. The specimens taken in the Netherlands contained in the Leyden Museum of Natural History are recorded, the later acquisitions in detail, with notes in many cases on peculiarities of plumage, but rarely is anything said about the status of the species as a bird of the Netherlands, either in reference to the manner or seasons of occurrence, except in the case of the rarer species. There are, however, many important critical notes on the particular subspecies found in the Netherlands.—J. A. A.

Hartert's 'Die Vögel der Paläarktischen Fauna,' Heft V.²—Part V of this great work bears date February, 1909, after an interval of nearly two years since the publication of Part IV, in March, 1907. This part begins with the remaining species of *Phylloscopus* and ends at the beginning of the genus *Turdus*, which he announces will be taken in a broad sense, to include a large number of more or less current genera. The present part thus comprises the families Sylviidae and Crateropodidae of authors, and the species and subspecies numbered 796 to 986, practically all 'Palearctic.'—J. A. A.

Count von Berlepsch on the Birds of Cayenne.³—This enumeration of the birds of Cayenne is based primarily on a collection made by George K. Cherrie, assisted by Benjamin T. Gault, during four months (October, 1902–January, 1903), for the Tring Museum. This collection comprised 1300 well-prepared bird-skins, representing 254 species. In order to make the list complete, the author has added in brackets all the species that have been reported as occurring in Cayenne, this being, according to the author, the first attempt to give complete enumeration of the birds of that country. The list comprises 626 species, of which 553 have been satisfactorily determined as birds of Cayenne; the other 73 are hypothetically included, on the basis of doubtful records (23) or their general range (50). The author believes that we may add about 140 more as birds likely to occur there, so that "we are justified in computing the number of species inhabiting that country to be about 766." In footnotes, under each family, are enumerated the additional species that may perhaps occur in Cayenne.

The paper thus consists: (1) of a list of the species collected by Mr.

¹ Contribution to our Knowledge of the Avifauna of the Netherlands, being a List of all the Species of Birds hitherto observed, with special reference to specimens in the Leyden Museum. By Dr. E. D. van Oort. Notes from the Leyden Museum 1908, pp. 129–214, pll. vii, viii.

² Die Vögel der paläarktischen Fauna. Systematische Übersicht der in Europa, Nord-Asien und der Mittelmeerregion vorkommenden Vögel. Von Dr. Ernst Hartert. Heft V.—8vo, pp. 513–640, fig. 93–124. R. Friedländer und Sohn, Berlin. Published February, 1909. Price, 4 mark.

For notices of previous Parts see Auk, XXI, pp. 95, 505; XXII, p. 428; XXIV, p. 362.

³ On the Birds of Cayenne. By Hans Graf von Berlepsch. Novitates Zoologicae Vol. XV, pp. 103–164, 261–324. June and November, 1908.

Cherrie, and an enumeration of the specimens of each obtained, together with the dates, localities and measurements, and the collector's notes on the color of iris, bill, feet, and soft parts, etc.; (2) comment on the general character of the specimens, when necessary; (3) previous records of the species from Cayenne; (4) reference to the place of original description of the species, the citation of synonyms, if any, and a statement of the type locality, which is here sometimes for the first time assigned; (5) occasional comment (in footnotes) on questions of nomenclature. Only three forms (subspecies) are described as new, which may be taken to indicate that the ornithology of Cayenne is now pretty well known.—J. A. A.

'*Cassinia*.'—This always interesting annual¹ contains the usual variety of matter relating to the birds of eastern Pennsylvania, New Jersey and Delaware. Besides the abstract of the Proceeding of the Delaware Valley Ornithological Club, the membership lists of the Club, and a bibliography of contributions to the ornithology of the region, it contains the usual number of short papers, and Mr. Stone's report on the Spring Migration in the vicinity of Philadelphia, based on the combined observations of the members of the Club.

The first paper is a biographical sketch of George Ord, with a portrait, by Samuel N. Rhoads, in which is summarized the little that is at present known of the life and literary work of this pioneer American zoölogist. Ord was born March 4, 1781, but whether in Philadelphia or in England Mr. Rhoads is unable to state, and died in Philadelphia in 1866. He is principally known as the biographer and literary executor of Alexander Wilson, he having edited Wilson's eighth volume, and written the text of the ninth, both volumes having been published after Wilson's death. He also contributed the zoölogical matter to the second American edition of Guthrie's Geography, a work now so rare that only two or three copies are known to exist. This contribution, on account of its rarity and importance, was republished by Mr. Rhoads in 1894. Ord also published two editions of 'Wilson's American Ornithology,' respectively in 1824 and 1828-29, to which he contributed original matter. He also published biographies of Thomas Say and C. A. Lesuer. According to Mr. Rhoads, Ord was a lexicographer as well as a naturalist; his extensive contributions to Noah Webster's Dictionary were unacknowledged; Latham, of London, later "secured from Ord the whole MSS. of nearly forty years' work in philology, and in every instance, where he used it in compiling his new edition of Johnson's Dictionary he makes acknowledgment to the Ord MSS." Ord was an office-bearer for many years in both the American Philosophical Society and Academy of Natural Sciences of Philadelphia, of which latter he was President, 1851-1858, and, at different times, Secretary, Treasurer, and Vice-President of the Philosophical Society.

¹ *Cassinia*, A Bird Annual. Proceedings of the Delaware Valley Ornithological Club of Philadelphia. 1908. Issued March, 1909. 8vo, pp. 84, and 3 half-tone plates. Price, 50 cents.

The other papers in 'Cassinia' are: 'The Mourning Warbler in Warren County, Pa.,' by Thomas H. Jackson; 'Some Birds of a Maurice River Farm,' by Chreswell J. Hunt; 'Catoxen Cabin on the Ranconcas,' by George Spencer Morris; 'Bird-Life at Catoxen,' by Witmer Stone; 'Three Finds in South Jersey,' by Robert Thomas Moore; 'A List of the Birds observed on the Barnegat Region of the New Jersey Coast in August, 1908,' by Wm. C. Braislín, M. D.

The Club held sixteen meetings during the year 1908, with an average attendance of twenty-two. The officers for 1909 are William A. Shryock, President; Stewardson Brown, Vice-President; Chreswell J. Hunt, Secretary; Samuel Wright, Treasurer; Witmer Stone, Editor of 'Cassinia.' — J. A. A.

Stone's 'A Review of the Genus *Piaya* Lesson.'—Mr. Stone¹ here recognizes three species — *P. melanogastra*, *P. rutilus*, and *P. cayana*, the latter with 10 subspecies, two of which are described as new. This revision is based on 259 specimens, and, of course, is made from the modern viewpoint. He refers to a brief review of the group made by the present writer in 1893, pointing out several errors made, as he kindly says, "largely through lack of material," and notes that "he ignored Cabanis's explanation of the true nature of Gambel's *macroura*," etc. We may here explain that Part IV of the 'Museum Heirnanum,' which contains Cabanis's review of the genus, was not then accessible to us, the copy of the work then available containing only the first three parts; otherwise probably Cabanis's ruling on the type localities of *P. macroura* Gambel and *P. circe* Bonap. would not have been 'ignored,' and the consequent errors would have been avoided. It is of interest that Mr. Stone is able to so emphatically confirm Cabanis's opinions on these two important points.

After reviewing the history of the group, Mr. Stone presents a 'key to the species and subspecies,' followed by the synonymy and a brief description of each form. If the forms to which critical reference is made had all been given in the synonymy of the species it would have added to the convenience of future investigators of the group, and have made clearer the several nomenclatural departures from current usage, all of which seem to be well founded. It may be added that the two new subspecies — *P. cayana cauce* and *P. c. boliviana* — are based on recently acquired material in the American Museum of Natural History.— J. A. A.

Watson's 'The Behavior of Noddy and Sooty Terns.'²—This is the report of observations made by the author at Bird Key, a small island of the Dry

¹ A Review of the Genus *Piaya* Lesson. By Witmer Stone. Proc. Acad. Nat. Sci. Philadelphia, Vol. LX, Pt. 3, July-Dec., 1908, pp. 492-501.

² The Behavior of Noddy and Sooty Terns. By John B. Watson, Professor of Experimental and Comparative Psychology, The Johns Hopkins University. Papers from the Tortugas Laboratory of the Carnegie Institution of Washington, Vol. II, 1908 (1909), pp. 187-225, pls. i-xi, and 2 text fig. [Separates not dated, but distributed early in March, 1909.]

Tortugas group, during May 4–July 18, 1907. The author says: "The specific object of my stay was to observe as far as possible the details of the lives of the noddy terns (*Anous stolidus*) and the sooty terns (*Sterna fuliginosa*) during their nesting season on that island.... Our interest.... centered around the portrayal of their activities." The work was conducted from the viewpoint of the psychologist, and is said by the author to be preliminary, and adds: "but since the immediate continuation of the work is not assured, and since work of the kind is more or less 'impressionistic,' the attempt is here made, while the material is still fresh in mind, to enumerate some of the more important problems to be found in the study of these birds and to set forth my tentative efforts to solve them."

A general description of the two species is followed by an account of the geographical situation and history of the present colony of terns, which occupies "a small coral island about 300 yards wide (east and west) by 400 yards long (north and south)," situated about 66 statute miles due west from Key West. "Owing to its juxta-tropical location, its slight elevation, and the condition of its surface (largely coral sand), the actual surface-temperature of this island is very high, ranging at times during the hottest days from 124° to 143° F." The only vegetation consists of bay-cedar bushes, abundant over the central and western parts of the island, and a dense cactus growth over a small portion of the southeastern part, both being used by the noddies for nest-sites.

The food and feeding habits, the mating, nest-building, and the daily activities of both species throughout the breeding season are minutely detailed, together with an account of the development of the young in captivity, and of tests as to recognition between mates, and of the egg, nest, and nest locality. There are also accounts of experiments on distant orientation, and on the "learning of problem boxes" and "the maze." Such a minute and detailed study, conducted with scientific exactness, of the activities of any species of wild bird has doubtless never before been made, and is hence of the highest interest as a contribution to the life histories of the two species here under investigation, aside from its value from the psychologic side. The matter is divided into sections, under special subheadings, each section closing with a brief summary of the subject under discussion.

Under 'Food and Feeding Habits' it is stated that neither species ever touches the water except to drink or bathe; they "never swim nor dive," and in bathing never completely immerse the body, the breast and head being the only parts dipped into the water. In feeding they follow schools of minnows attacked by other fish, and "pick off these minnows as they hop up above and over the surface of the water." They thus differ greatly in habits from our northern species of terns, which freely plunge beneath the surface to secure their prey. The birds appear to fish exclusively in the daytime, they all returning to the island at night. The author gives it as his belief that "these birds rarely leave the island [on their fishing trips] for distances greater than 15 knots." This belief is based on the

testimony of light-house keepers and on a single cruise in a launch for observation.

When the author arrived at the island, on May 4, both species were already actively engaged in nest-building, and some of the birds were beginning to lay. Thus there was little opportunity to observe the mating of either species, which are reputed to mate before reaching the island. He, however, records a "striking series of reactions between two noddies," which he considers may have been a case of mating. The supposed male began nodding and bowing to a supposed female (the sexes are externally indistinguishable), when the latter gave immediate attention and began to extract fish from the throat of the other bird. "The feeding reaction was alternated with the nodding." Then the male brought a stick and deposited it near the female, and then the male attempted sexual relations.

The noddies nest in bushes; the number of nests was estimated at 700, which would give a total of 1400 adult noddies on the island. 'The nest of the sooty, when any is made, "consists of a shallow oval depression in the sand." The number of nests of this species on the island was found to be (approximately) 9429, which would indicate the presence of 18,858 adult sooties. Where the nests of the sooties "are very numerous they often are not more than 10 to 12 inches apart. On account of this close grouping of the nests," says the author, "and of the quarrelsome nature of the brooding birds, *exact localization of nest and recognition of nest and mate* easily became the most important features in the lives of the sooty terns. This situation affords a convenient starting-point for a psychological study of the behavior of these birds."

Under 'Reactions of the Noddies [and Sooties] observed in nest-building' are given a very detailed account of the actual nest-building of a pair of noddies, and of the selecting of nesting-sites by the sooties and the formation of their nest cavity. Under the caption 'The Daily Rhythm of Activities' are detailed with great minuteness the daily routine of each species, before the egg is laid, during incubation, and after the egg is hatched; from which it appears that in the case of the noddy the male and female pursue a different daily routine during the period of nest-building and before the egg is laid, the female remaining almost constantly at the nest, the male supplying her with food. During the nest-building and egg-laying period the chief points in the lives of the noddies are thus summarized: "(1) there is common activity in the building of the nest; (2) the female guards the nest while (3) the male procures food for both." The manner of feeding the female by the male, as here described, is well worth citing, not only for its intrinsic interest, but also as an illustration of a highly specialized vocabulary: "The male fishes until intra-organic pressure of food in the crop reaches a certain intensity [in other words, until the crop is full]. This acts as a stimulus to return (proximate and distant orientation discussed on pages 224 and 277 respectively). The visual stimulus of mate (and nest and nest locality) coupled with the intra-organic stimuli

just mentioned, condition the feeding reaction [*i. e.*, on seeing his mate he proceeds to offer her food]. On the part of the female we have the intra-organic (hunger) stimulus and the visual stimulus induced by the movements of the male [*i. e.*, the female, being hungry, is willing to be fed]. The male disgorges until there is a cessation of the excessive intra-organic pressure, at which time his feeding movements cease and the female may strike his beak in vain. The female in her turn feeds until there is both a cessation of hunger and a normal intra-organic pressure established. If this takes place before the male is ready, he in turn attempts to further stimulate the female by a slight change in behavior (*i. e.*, 'coaxing' by tapping the female and putting his beak down near her)."¹

In the case of the noddies: "After the egg is laid, a marked change appears in the behavior of both the male and female." Before this period the birds are shy and will not permit a near approach; later on they will viciously attack a human intruder, or will sit on the egg and allow themselves to be caught. In explanation: "It may be said here that the stimulus to the change is to be sought for in the tactical and visual impulses aroused by the egg," or in what, in ordinary parlance, would be termed parental solicitude. The male now no longer feeds the female, each bird taking equal turns at brooding the egg. A tabular statement is given of the shifts made at three nests of noddies for May 21, 22, and 23. The behavior of brooding noddies is thus summarized: "(1) The presence of the egg brings about a change in the distribution of labor between the sexes; (2) the male no longer feeds the female but each sex separately obtains its food; (3) the egg is brooded constantly night and day by both sexes, the male and female relieving each other at intervals varying from 30 minutes to 5 hours, the average interval being in the neighborhood of 2 hours; (4) the most significant general reaction caused by the presence of the egg is the change in the disposition of the birds."

¹ This is not offered in personal criticism of Dr. Watson's excellent paper, but as a protest against the pedantry shown in nearly all modern research along new lines, where a new vocabulary is often invented for the expression of common-place knowledge. New terms are frequently needed for the expression of new facts, new processes, new hypotheses, but how often are well-known facts or principles hidden or obscured to all but the specialist by being clothed in a new verbiage. The science of ecology — the relation of the organism to its environment — *e. g.*, is burdened by pedantic expressions for previously observed and intelligently recorded conditions and relations, which are restated in new and often hypertechnical terms, with the air of their being a new contribution to knowledge. Text-books of the subject are necessarily accompanied with glossaries for the definition of the new terms employed, since they are not to be found in even the latest and most up-to-date dictionaries, while some of them would puzzle a linguist to determine their etymology and significance. The above annotated excerpt from Dr. Watson's paper merely illustrates the tendency to pedantic jargon in many of the newer lines of research. Dr. Watson is of course writing as a specialist in animal psychology, for other specialists in this field of research — not for the layman nor especially for ornithologists — and it is but natural that he should employ the vocabulary approved by his colleagues.

Similar observations are recorded on the behavior of the sooty during the period of incubation, in which are noted changes similar to those recorded for the noddy, with the important exception that the shift at the nest in the case of the noddy occurs about once in two hours, and in the case of the sooty only once in 24 hours. The period of incubation for the noddy is given as from 32 to 35 days; the period of incubation for the sooty was found to be 26 days.

The activities of both species after the egg is hatched are recorded in similar detail. The young of the noddy are fed at intervals varying from one to four hours, and those of the sooty every four to seven hours.

An interesting part of the paper relates to experiments in testing the ability of recognition between mates, and of the parents to recognize nest and young. While it is perfectly evident that such recognition must exist, and cannot with reason be doubted, Dr. Watson's tentative proof that such is the case is of interest. Birds were taken from marked nests, and the birds themselves were also marked with oil paints; while this process caused disturbance in the relations of the birds for a short time, they soon became reconciled to the new conditions.

Experiments in relation to recognition of the egg showed that neither species recognizes its own egg, as is well known to be the case with many other birds. Both species, also, would submit to considerable changes in the size and character of the nest, and even to a slight change in its position, without deserting it, but not without obvious recognition of the changed conditions. A large number of experiments have relation mainly to the length of time required for adjustment to the new situation. Where the environment was markedly altered the bird remained undisturbed so long as the position of the nest was not disturbed. Says Dr. Watson: "If one recalls the conditions under which they [the sooties] lay their eggs, namely, in open spaces and at distances apart sometimes not greater than 10 to 14 inches, one can not but admire the exactness and ease with which the sooty approaches her own nest." This certainly shows a high power of discrimination, quite in harmony with the action of birds in general, and perhaps renders not less wonderful, but perhaps less astonishing, the ability of migratory birds to find their way back to their own former nesting-sites after hundreds and even thousands of miles of migratory travel. With such power of local orientation as all birds show in the matter of the nesting-site, is it so very strange that they should be able — accidents and stress of weather aside — to orient themselves on their migratory journeys? While the exact nature of this ability may not be at present known, its possession is beyond question.

Dr. Watson's experiments on distant orientation are here for the first time fully stated, but the principal facts have already become more or less current. His comment thereon is disappointing inasmuch as no explanation is attempted. But perhaps this was to be expected for, as he says: "the facts obtained from them are extremely difficult for current theories of distant orientation to explain." These experiments, briefly

stated, are: (1) Six noddies, "marked characteristically and individually with oil paints," were put on board the laboratory launch bound for Key West; two, liberated when 19.5 statute miles distant, returned to their marked nests in $2\frac{1}{2}$ hours after they were released; two were liberated at a distance of 44.75 statute miles and returned to their nests in $1\frac{1}{2}$ hours after their release; two were liberated at Key West, 65.8 statute miles distant, and reached their nests, one 11 hours later and the other about 23 hours later, night intervening when the birds probably did not attempt to fly.

(2) Three noddies and two sooties, captured and marked, and their nests likewise marked, were taken, June 13, via Key West, to Cape Hatteras and liberated 12 miles east of the Cape. Several days after the marked sooties were found at their nests, and a few days later one of the noddies was seen attempting to alight on its nest, but its mate, having formed new 'affiliations', this was not permitted. Dr. Watson states that he has no doubt the other two noddies returned to the island and were likewise not permitted to return to their nests. The distance in a direct line from Bird Key to Cape Hatteras is about 850 statute miles, and by way of the coast about 1080 statute miles. The birds were thus taken hundreds of miles to the northward of their normal range, yet were able to return quickly to their nests on Bird Key.

(3) On July 8, two noddies and two sooties, marked for identification, were taken to Havana; they were released on the 11th, and reached Bird Key on the following day. The birds were in such poor physical condition from the strain of caring for their nearly full-grown young that it was decided not to take them further away before releasing them.

In the present connection there is space merely to call attention to Dr. Watson's interesting experiments with young terns in learning the 'problem box' and the 'maze,' which are of special interest to the psychologist rather than to the ornithologist. Dr. Watson's paper, as amply shown above, is noteworthy from the double viewpoint of ornithology and psychology; it is a detailed and continuous study of the activities of two species of a very interesting group of birds during nearly the entire season of reproduction. The accompanying eleven plates illustrate the nesting attitudes of the old birds, young of various ages of both species, groups of nesting sooties, flashlight pictures, to show the possibility of studying the behavior of the birds at night, the character and grouping of the nests of the noddies, and the group activities of both sooties and noddies.—J. A. A.

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CORRESPONDENCE.

Where the Skeletons of American Birds may be Studied.

EDITORS OF 'THE AUK':—

Dear Sirs:—It is not my intention in the present communication to furnish a list of either public or private institutions in this country where may be found, for the use of students of the subject, a collection of skeletons of birds, much less to supply the names of those possessing such material and who are willing to place it at the disposal of workers and authors in this department of comparative anatomy. Not that such a list would not be of use and value to ornithomists generally were it published, but, so far as my knowledge carries me, the necessary information for it has, up to the present time, never been prepared. On the other hand it is hoped that it may prove to be of some service to students of the anatomy of birds to know where they may examine and study a representative collection of skeletons of the Class, all of which have been figured, described and published in various scientific periodicals and found in all the larger libraries everywhere. Reference is here made to the material which composed what was up to a few months ago my own private collection.

Through donation this is now the property of the New York State Museum at Albany, where it is being classified and otherwise cared for, in order to render it available to such students having occasion to utilize it in their work. It is in charge of Doctor John M. Clarke, Director of the Science Division of the New York State Education Department at the State Hall in Albany, who doubtless will be glad to furnish any information in regard to it. So far as American species go, this is probably the largest collection of the kind in this country, and the specimens all being unmounted and described, they present data and the opportunity for study and comparison, not as yet found elsewhere in this country. Either perfect skeletons or parts of skeletons here represent nearly all the main genera of the birds of the United States. Moreover, the majority of them are *types*, thus rendering them especially valuable for scientific reference. Perhaps I may be pardoned for alluding here to the many cherished associations that are, for me, forever bound up in this collection. It took many years to bring it together, and in the work I was not only assisted by members of my immediate family, now gone, but by many others whose names we find among those on the last few pages of the autumn issue of 'The Auk.'

It is a satisfaction to know that this collection of skeletons is now in such good keeping, and from *Aechmophorus* to *Sialia* I trust they will do duty for many a year yet to come.

In closing, it may be of interest to my friends to know that there is now passing through the press a special Bulletin, under the direction of the

Education Department at Albany, which is devoted to four of my osteological memoirs on birds. They cover the *Accipitres*, the *Anseres*, the *Gallinae*, and a special one on the *Coccyges*. Some two hundred heretofore unpublished figures illustrate the text.

Very faithfully yours,

R. W. SHUFELDT.

NOTES AND NEWS.

CHARLES ALDRICH, a Fellow and one of the Founders of the American Ornithologists' Union, died at Boone, Iowa, March 8, 1908, at the age of 80 years. In accordance with a standing order of the Union respecting deceased Fellows, a memorial of his life and work will be presented at the next stated meeting of the Union, and published later in 'The Auk'.

EDWARD SEYMOUR WOODRUFF, an Associate Member of the A. O. U., died of typhoid fever at his home in New York city on January 15, 1909. He was the youngest son of Charles Hornblower and Catherine Sanford Woodruff, and was born in New York City on December 23, 1876. He was graduated from the Academical Department of Yale University with the class of '99, afterwards, for a year, pursued a special course in biology at Johns Hopkins University, and later entered the School of Forestry at Yale from which he obtained the degree of Master of Forestry with high honors in 1907. Shortly afterward he received an appointment as State Forester of New York, which post he filled with great ability up to the time of his death.

Much of Mr. Woodruff's early life was spent at his country home in Litchfield, Conn., and here while wandering in woods and fields he developed a taste for natural history in several of its branches, and cultivated that love of prying into Nature's secrets which is the greatest asset of every true naturalist. He was always deeply interested in ornithology, and leaves behind him a fine collection of birds as a monument of industry and devotion to this science; while the excellent notes and papers which he published gave promise of still more valuable ones to follow. Among them may be cited, as of exceptional value, the carefully prepared list published in 'The Auk' for April, 1908, with title 'A Preliminary List of the Birds of Shannon and Carter Counties, Missouri,' and 'The Ruffed Grouse — A Study of the Causes of its Scarcity in 1907,' published by the Forest, Fish and Game Commission of New York, in 1908. Both are models of their kind, the former dealing with the scientific side of systematic ornithology, the latter covering one of its economic aspects.

For the profession of forestry, Mr. Woodruff was admirably fitted by education and by temperament, and he had already made his mark in a career that promised much for the country at large. He was the right man in the right place, and forestry can ill afford to lose men of his stirring qualities and mental calibre.

Those of us who have been fortunate in knowing Mr. Woodruff as a friend cannot soon forget a personality that never failed to attract even strangers through a naturalness of manner that bespoke a warm heart and a sincerity of purpose beyond the ordinary. We feel that ornithology, too, has suffered a loss, for ornithologists will miss from their ranks a companion who was filled with enthusiasm and energy.— J. D., Jr.

THE Thirteenth Annual Meeting of the Audubon Society of the State of New York was held at the American Museum of Natural History, March 18, 1909. The President of the Society, Henry Fairfield Osborn, presided. The report of Miss Emma H. Lockwood, Secretary-Treasurer, showed that the Society had been active in protecting the birds of the State, and in supplying literature relating to bird protection and bird study for the use of teachers and others, so far as its available funds permitted. Mr. William Dutcher, the President of the National Association of Audubon Societies, and Chairman of the New York Society's Committee on Legislation, presented a report on current legislative matters with particular reference to a bill now before the New York Legislature, the passage of which would practically prohibit the sale of the plumage of all New York State birds for millinery purposes. Mr. Dutcher asked all the members of the Society to urge their representatives at Albany to support this bill.

Following Mr. Dutcher's report, Mr. Louis Agassiz Fuytes, the well-known bird-artist, made an address on birds and their music, which he illustrated with chalk sketches in color of the birds and imitations of their songs. There was also an exhibition in the Bird Hall of the Museum of a large series of paintings of birds by Mr. Fuytes.

THE Darwin Memorial Celebration held at the American Museum of Natural History, February 12, 1909, by the New York Academy of Sciences, was made the occasion of the presentation by the Academy to the Museum of a bronze bust of Darwin, with appropriate ceremonies. It was permanently installed at the entrance to the Synoptic Hall, which was renamed and dedicated as "The Darwin Hall of Invertebrate Zoölogy"; bronze tablets thus inscribed have been placed at the entrance to the hall. The presentation address was made by Charles Finney Cox, President of the Academy, and the address of acceptance by Henry Fairfield Osborn, President of the Museum. Other addresses were by Prof. John James Stevenson on 'Darwin and Geology'; by Dr. Nathaniel Lord Britton on 'Darwin and Botany'; by Dr. Hermon Carey Bumpus on 'Darwin and Zoölogy.'

The celebration was accompanied by an exhibition of Darwiniana (published works, portraits, and letters of Darwin), and specimens illustrating various aspects of the evolution of animals and plants, living and extinct, arranged in fifteen categories, with reference to as many special features of evolution. The exhibition remained on view from February 12 to March 12, and formed an attractive as well as instructive display.

As everybody knows, or has had the opportunity of knowing, the Roosevelt Expedition to Africa is not merely a hunting trip for the gratification of the big-game aspirations of an ex-President of the United States, but a thoroughly organized expedition in the interest of the United States National Museum and of science. The money for its equipment and maintenance, beyond the personal expenses of its chief, has been raised by subscription through the efforts of the Secretary of the Smithsonian Institution, and the personnel has been chosen from the leading experts in field work. The personal interest of Theodore Roosevelt in natural history research is well known, and in Major Edgar A. Mearns, a Fellow and one of the Founders of the American Ornithologists' Union, and an ornithologist and mammalogist of demonstrated ability, he has a medical adviser and a scientific assistant that ensures energetic and intelligent work. Edmund Heller and J. Alden Loring are collectors of wide experience and exceptional ability. Under such conditions, barring accident or illness, the results of a year's work in British East Africa by such a staff should be of the greatest scientific importance and bring to this country a greatly needed collection of the leading forms of the vertebrate life of a region at present poorly represented in American Museums. We are sure the expedition will have the hearty good-speed of every reader of this journal.

THE Avicultural Society of California has begun the publication of a bimonthly official magazine, called 'Bird News,' "devoted to the interests of the bird fancier." Volume I, No. 1, for January-February, 1909, consists of eight octavo pages of well printed and well edited matter pertinent to the interests it represents. Editor, Frederick W. D'Evelyn; Business Manager, W. W. Cooley, 717 Market St., San Francisco, Cal.

THE Spring announcement of new books by Henry Holt and Company contains 'Birds of the World,' by F. H. Knowlton and Robert Ridgway, with illustrations in color. \$7 net.—The Houghton, Mifflin Company announce 'Birds of the Boston Public Garden, a Study in Migration,' by Horace Winslow Wright, with an introduction by Bradford Torrey.

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Code of Nomenclature. Revised edition, 1908. Paper, 8vo,
pp. lxxxv. 50 cents.

Index to The Auk (Vols. I-XVII, 1884-1900) and **Bulletin Nuttall
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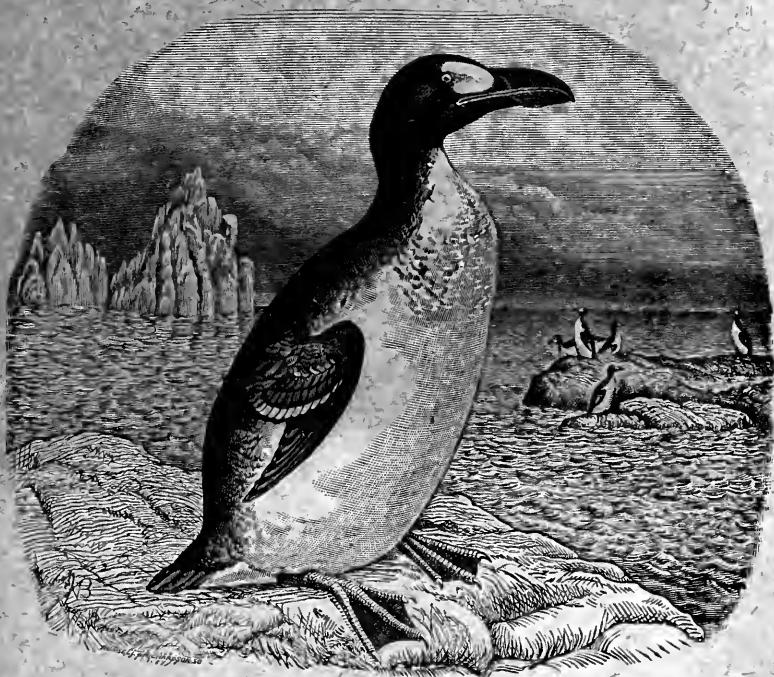
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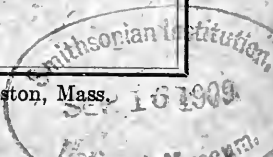


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THE GEOLOGICAL AND GEOGRAPHICAL RELATIONS OF THE LAND-BIRD FAUNA OF NORTHEASTERN AMERICA.

BY SPENCER TROTTER.¹

THE antiquity of existing faunas is a problem beset with difficulties and involved in obscurity. One who fares forth in this quest will find few landmarks to serve him as a guide. No evidence from fossil remains is forthcoming, for the deposits in which recent animals have been buried are as yet incoherent muds and silt, often beneath the waters of lakes and swamps and tidal inlets. The remains of mammals and reptiles may thus have been accumulating in many places over long periods of time, since the beginning, at least, of post-glacial conditions. Undoubtedly the soils of old forest floors and peat bogs and the mud of lake bottoms contain a vast number of such remains, but it is altogether unlikely that among these is any large proportion of the more fragile skeletons of birds. Even if they were preserved these remains, like those of other creatures, would still be in inaccessible situations. The clew to this history of faunas is to be looked for rather in the distribution of living forms as we find them to-day; to facts relating to the alteration of habitats, the invasion of new territory by certain species, the recession from territory once occupied, and the dominance and variety of forms of particular genera in various localities.

¹ Read before the Delaware Valley Ornithological Club, Philadelphia, March 4, 1909.

The present paper is the outcome of an article previously published by the writer in 'The Popular Science Monthly'¹ which dealt with the effect of the settlement of the country upon the distribution of bird life, what we might term the bird life under aboriginal conditions as compared with its present aspects. The problem as stated in that article was this: If eastern North America was in the main a forest-covered land, as both historical narrative and existing physical conditions indicate, what was the status of the bird life that now inhabits our open fields and grass country? Have certain birds altered their *habits* or their *habitats*? Facts seem to point to the last named of the two alternatives as offering the mostly likely solution to the problem since most of our grass-frequenting species are of wide distribution toward the west, throughout the prairie region, and many of them are represented by geographical races on the Great Plains. Such species as the Vesper Sparrow or Grass Finch, the Savannah and Grasshopper Sparrows, the Meadowlark, Bobolink, and Red-winged Blackbird, the Killdeer and Grass Plover were cited in illustration, and I stated my belief that these birds had found their way into the newly opened lands from the western prairie region. An exception might be made in certain species — that of the Bobolink which may have frequented the river marshes, and also in the case of the Savannah Sparrow which appears to be a coastwise bird, dwelling along the edge of the maritime marshes, though its present habitat may be a comparatively recent occupancy. The Black-throated Bunting or Dickcissel was cited as a remarkable case of recession from its one time habitat in certain eastern localities during the latter half of the nineteenth century, and there is good evidence for believing that this bird was originally an invader from the prairie region. Its great abundance in the grass country of the Middle West and its rather limited distribution in the East, coupled with its somewhat abrupt disappearance from the last named region, certainly point to this conclusion. Audubon speaks of its abundance in the prairie lands of Texas, Missouri and Illinois as compared with the middle Atlantic districts and that it was "rarer in Ohio, and scarce in Kentucky," which is good evidence, for at the

¹ 'Birds of the Grasslands.' The Popular Science Monthly, Vol. XLII, p. 453, February, 1893.

time of which he writes Ohio and Kentucky were still covered with much woodland. He further adds, "they are rarely observed to pass over South Carolina," a statement that would indicate that this species did not migrate along the coastal plain from the south, but spread eastward from its main prairie center of distribution.

So much for this aspect of the problem which is here briefly reviewed. There is abundant room for further research into the past and present relations of our eastern bird fauna, and it is the purpose of this paper to point out certain facts that seem to indicate changes in the status of the bird population of various districts. It is hazardous to attempt to draw conclusions as to the past history of a fauna from such slight evidence as the present distribution of species, but some irregularities in the distribution of certain species of birds seem to have been remotely the result of certain geological processes, at least within the post-glacial period. What evidence I have to offer in support of this statement is as follows: For a number of years I resided during the summer months (from mid-June to September) at Barrington, Nova Scotia. Barrington lies just back of Cape Sable Island at the extreme southern end of the peninsula. The general aspect of the surrounding region is that of a typical boreal country — a coniferous forest, composed mainly of spruces and balsam fir, interspersed with tamarack swamps, sphagnum moors with their associate flora, notably Labrador tea (*Ledum*), *Rhodora*, and several species of *Vaccinium*, thickets of the northern alder, and aspens and birches. The bird fauna is decidedly Canadian in its character, such forms as the Olive-backed and Hermit Thrushes, the Hudsonian Chickadee, the Golden-crowned Kinglet, the Red-bellied Nuthatch, the Nashville, Yellow Redpoll, Magnolia, and Myrtle Warblers, the Junco, the White-throated Sparrow, the Solitary Vireo, the Rusty Blackbird, the Canada Jay, the Alder and Olive-sided Flycatchers, and the Black-billed Cuckoo being more or less abundant throughout the breeding season, while the Pine Grosbeak, the Pine Siskin, and both species of Crossbills were abundant during certain years in the breeding time, but conspicuously absent in other summers. With this assemblage of Canadian birds were many other widely spread species as the Robin, the Song Sparrow, the Black and White, Chestnut-sided, and Yellow Warblers, the Savannah

Sparrow, the Purple Finch, the Barn, Cliff, and Tree Swallows, the Nighthawk, Flicker, and others, but such wide-ranging forms as the Bluebird, the Vesper Sparrow, the Chipping Sparrow, the Goldfinch, and the Meadowlark were never observed during the six summers spent in this region, while the Kingbird only appeared at the latter end of the summer, about the last of August or early in September, though breeding in more or less abundance in districts farther to the north and west, and the Bobolink, which was quite common in the dike lands about Canning and the Basin of Minas, was only occasional in this southern Barrington district.

The past summer, 1908, I spent at Chester, Nova Scotia, a small village at the head of Mahone Bay, an inlet of the Atlantic, fifty miles south of Halifax and about one hundred and fifty miles north along the coast from Barrington. The region was in every way similar to that about Barrington, but here at Chester I found the Chipping Sparrow and the Goldfinch relatively abundant, yet at no time was either of these birds ever seen at Barrington, though habitat conditions there were equally favorable for both. How far southward these species extend beyond Chester I am unable to say, but the fact remains that they do not appear in the fauna of the lower part of the peninsula, at least so far as my six summers of observation and collecting about the Barrington region are concerned.

The solution of this rather curious local distribution of two such widely spread species as the Chipping Sparrow and the Goldfinch appears to me to be involved in a geological change, and to date back to a time when Nova Scotia was severed from the mainland, where what is now a low-lying and partly marshy tract of country which forms the present neck or isthmus that separates the waters of Northumberland Strait on the north from those of Chignecto Bay, at the head of the Bay of Fundy, on the south. This region, which we may call the Amherst district, from the principal town situated there, is evidently an uplift of comparatively recent geological date. Nova Scotia was unquestionably at one time an island, severed from the rest of the continent by a strait, probably of some width, which connected the two bodies of water mentioned above. How wide a stretch of water this strait may have embraced it is difficult to say. Prince Edward Island is now separated from the

mainland by Northumberland Strait of a varying width of from nine to thirty miles. There is evidence of considerable submergence in the region about Amherst as Sir J. W. Dawson has shown in his 'Acadian Geology' (4th ed., 1891, pp. 29-31). Submerged forests, mainly of pine and beech, have been found in several localities about Cumberland Basin and Cobequid Bay, and the great 'dikes' about the Basin of Minas, which are reclaimed maritime marshes, Dawson regards as undergoing slow submergence. All these facts indicate at least, an unstable condition, and taken together with the low relief of the region as a whole and the present general relations of land and water we are justified, I think, in believing that this strait once existed, and that at a not very remote period. Furthermore, there is much evidence to show that considerable areas along the northeastern coast of the continent have suffered submergence under the enormous weight of the ice mass that was pushed seaward from the Laurentide Glacier.

The relative distribution of land and water areas unquestionably exerts an important influence in determining the range of various species of land birds. Many land birds migrate over wide stretches of sea, but, as Wallace has pointed out, such routes possibly indicate a former land surface that has become gradually submerged. The observations of Mr. Wells W. Cooke would seem to disprove this, as the evidence he has gathered regarding the Gulf and Caribbean routes indicate that migrating birds frequently follow courses that lead over the deeper parts of these waters. In the problem before us, however, we are dealing with more than the purely migratory impulse. This migratory impulse *per se*, I take it, is the primitive instinct of certain species of birds to reach a northerly region where food of a suitable kind for the young is abundant and where the summer day is long, giving the maximum light conditions under which to forage.¹ After a bird has reached this summer home it will constantly tend to widen its breeding area, spreading out over a larger territory, limited of course by various ecological factors, as suitable habitat conditions, by the pressure of other species, by the nature and abundance of food, by temperature, and by the conformation of land and water areas. The entire

¹ See article by E. A. Schäfer, F. R. S., 'On the Incidence of Daylight as a Determining Factor in Bird Migration.' *Nature*, Dec. 19, 1907.

phenomenon of migration may possibly have originated as an extension of a once more southerly breeding range of various species of birds which followed the widening zone of green and the development of insect life northward in the wake of the receding ice sheets. The individuals of a species that spread farthest to the north became the migrating element, passing over the intervening areas.

The present land bird fauna of Nova Scotia may have been derived from two faunal stocks — a more primitive boreal one that has occupied the region from remote times, and a later transition fauna which has invaded the peninsula since the reëlevation of the previously sunken isthmus. This somewhat venturesome statement appears to be borne out by certain facts. Many of the boreal types belong to genera of widespread distribution in both the Nearctic and Palearctic regions. Such for example are *Pinicola*, *Carpodacus*, *Loxia*, *Spinus*, *Sitta*, *Regulus*, *Certhia*, and *Parus*. These may have occupied the region even during glacial conditions, for glaciers do not preclude a forest growth and food would be abundant during the short breeding season. Furthermore, these forms probably spread around the subarctic zone in Pleistocene times when possibly, as many geologists believe, a more extensive land relation existed between the eastern and western continental land masses than at present. Indeed, these genera may have a still older history, dating back to the Middle Tertiary, with a more decidedly polar distribution, but this is purely speculative and we have no evidence, fossil or otherwise, in support of this view. These boreal types, as we know, are wide rangers and the glacial winters would find them foraging to the southward, along the borders of the crowded Austral life zone. Narrow straits would offer no barrier; more than likely there was a much greater land area and wider land connections than at present when these hardy species made their seasonal shifts through the then subarctic forests of the region now embraced by Lower Canada and the northeastern United States. The present irregular movements of these birds may possibly be the result of a habit of wandering widely in search of food, impressed upon them by the precarious conditions of existence during the Glacial Period.

The purely American element in the present boreal fauna, such as the Thrushes, the several species of Wood Warblers, the Junco,

White-throated Sparrow, the Flycatchers and others mentioned above, seem to me to form a group that established themselves as breeders in the boreal zone at an early day after the uncovering of the land by the retreating glaciers, spreading into the Nova Scotia peninsula most likely soon after or possibly during the reëlevation of the land bridge. In reality they do not belong to the ancient boreal fauna as just outlined, but represent an early advance movement of the more southern bird life, a movement that is still in progress. These birds are all typical long distance migrants rather than wanderers and, unlike the true boreal wanderers, they leave a wide hiatus of unoccupied territory between their breeding grounds and their winter quarters. This is especially true of the Thrushes, Wood Warblers, the Vireo, and Flycatchers which feed on fruits, winged insects, and soft larva, while the seed-eating species like the Junco, the White-throated and other Sparrows, are not compelled to move so far and hence occupy a winter zone of territory much nearer to their breeding haunts. Yet even such northerly breeders as the Fox Sparrow and the White-crowned Sparrow leave a considerable breadth of unoccupied territory between their summer and winter ranges.

Sometime during the post-glacial period many purely transition or Alleghanian species spread into the Nova Scotia region, probably by way of the land connection, but the significant fact is that this movement is still going on and that some species, like the Chipping Sparrow and possibly the Goldfinch, have not yet invaded the entire territory. That they have come by the Amherst neck of land from the main continent is also evident since these birds do not appear to have reached as yet the more southern districts of the peninsula, at least along the eastern side, so far as my observations go. Still more significant is the support given to this view by Downs in his 'Catalogue of the Birds of Nova Scotia' ¹ in remarking upon certain species. From what I gather his observations are chiefly in the neighborhood of Halifax and in the more western parts of the Province. Of the Chipping Sparrow he says: "Lately became rather common"; of the Field Sparrow, "not very com-

¹ 'A Catalogue of the Birds of Nova Scotia,' by A. Downs. Proceedings and Transactions of the Nova Scotia Institute of Natural Science, Vol. VII, pp. 142-178, 1888.

mon"; of the Rose-breasted Grosbeak, "not common about Halifax, but of more frequent occurrence in the vicinity of Truro and Pictou" (Truro and Pictou are toward the west and nearer the Amherst district). The Goldfinch Downs speaks of as common. Of the Red-winged Blackbird he says: "very rare A few occur in the western part of the Province," and of the Meadowlark, "Very rare. Only a mere straggler." These are significant statements regarding two such widespread birds, especially the reference to the Red-wing occurring in the western part. The Vesper Sparrow he speaks of as a "common summer resident" though I never saw it about Barrington and Chester, nor did I see either the Field Sparrow or the Rose-breasted Grosbeak. Of the Catbird, which I found sparingly the first summer (1901) about the villages at Barrington, Downs says: "Rather common. . . . It does not arrive until the summer is well advanced. Breeds in alder swamps." This lateness of arrival, together with its apparently irregular appearance, may indicate a tardiness in the general northeastern extension of this species' range. The House Wren and the Thrasher are not included in Downs's list, nor have I ever observed these birds in the Province. The Ruby-crowned Kinglet is spoken of as uncommon, and this enlightening observation is made in regard to the Bluebird: "Uncommon. I have seen it breeding in an apple tree at Kentville. It appears to be getting a footing in Nova Scotia." I may add that I have never met with the Bluebird in the Province though I found it much farther north — on the north shore of the St. Lawrence near Les Eboullements in the Province of Quebec, and Dr. Dwight has recently reported it from Tadousac in the same region.¹

Further confirmatory evidence in regard to the extension of the range of certain birds is given by Dr. Dwight in his 'Summer Birds of Prince Edward Island' ² where he speaks of the Chipping Sparrow as "Not a common species, and only occasionally observed." Of the Goldfinch he notes, "a few seen almost daily." Of the Vesper Sparrow Dr. Dwight says: "An abundant bird, frequenting the open fields in the more settled districts." Neither the Catbird nor the Bluebird are recorded by Dr. Dwight in this

¹ Auk, Vol. XXVI, Jan., 1909, p. 83.

² *Ibid.*, Vol. X, Jan., 1893, p. 1.

Prince Edward Island list, and it is quite possible that these birds have not yet found their way across Northumberland Strait, while they certainly have invaded the Nova Scotia peninsula, though sparingly, by way of the isthmus. The Red-winged Blackbird and the Meadowlark likewise are not included in Dr. Dwight's list, though recorded by Downs in Nova Scotia as above mentioned.

These facts, it seems to me, point pretty conclusively to the gradual extension of certain species of birds into an area formerly separated from the main mass of the continent. Nova Scotia offers a singular proof of the use of a land route, for it would seem that birds had found their way into the region by the Amherst isthmus, as evinced by the occurrence of a number of species in localities comparatively near to this district, while still absent, or only occasional, in the more southern and eastern parts of the Province. Most of these species, also, as recorded by Downs, are still comparatively uncommon. In a list of birds observed at Pictou, N. S., from January to July, 1895, by W. A. Hickman,¹ the Chipping Sparrow, Field Sparrow, and Goldfinch are mentioned as very common breeders, but the Catbird, the Bluebird, and the Red-winged Blackbird and Meadowlark are not included in these observations.

Taking a broad view of the problem it would seem that there is some evidence for entertaining the idea that the extension of species into more northerly breeding grounds is a phase of distribution that is still going on; that our so-called "faunas" — Carolinian, Alleghanian, and Canadian — in reality represent a somewhat temporary state of groups of species in relation to breeding areas, and the more or less arbitrary boundaries of these faunas represent our knowledge only of the present conditions of distribution in a gradual and general northward movement of considerable antiquity. Mr. Witmer Stone has furnished me with some interesting facts relating to the northward extension of certain Carolinian birds into the Alleghanian, and even into the Canadian, zones of Pennsylvania.² About Harvey's Lake, Luzerne Co., and at Lopez, Sullivan Co., since the cutting off of the hemlock timber over considerable areas, the Yellow-breasted

¹ See *Ottawa Naturalist*, Vol. IX, p. 230.

² Stone, 'Birds of Eastern Pennsylvania and New Jersey.'

Chat, a bird regarded as characteristic of the Carolinian fauna, has made its appearance as a breeder, while the Chewink, a species of decidedly austral range, rarely going beyond the transition zone, has likewise invaded these localities. Mr. Richard C. Harlow,¹ records the Tufted Titmouse and the Yellow-breasted Chat in the decidedly Canadian element of Pike Co., Pennsylvania. Undoubtedly the conditions incident to 'second growth' are largely a determining factor in this invasion of new territory, for the opening up of a tract of country to more sunlight would certainly bring about an environment not unlike the typical Carolinian region further south. Still the individuals of these species must have the tendency to move northward farther than their apparent faunal limit, otherwise they would not find these favorable spots in new territory. Most likely they invade the region by way of the river valleys, spreading out into the surrounding districts.

Dr. Merriam has accumulated a vast amount of evidence to show the control exerted by temperature in the distribution of living organisms.² But is not this temperature relation more apparent than real, a temporary adjustment to the environing conditions which the temperature brings about rather than a hard and fast relation between temperature and the organism direct? The whole question is recondite, but it seems hardly possible for such closely related species as, for example, the Wood Thrush, the Veery, and the Gray-cheeked Thrush to be so profoundly influenced by temperature alone as to have their northward breeding ranges so widely different. Rather it seems to me each form represents either a pioneer or a laggard movement, as the case may be, in a general tendency of various species of birds to spread gradually northward into a region of new environing conditions which has been opened to them since the Glacial Period. The Canadian fauna, barring the more or less circumpolar forms, thus represents an advance group of species that spread into northerly breeding grounds at a probably early day after the disappearance of glacial conditions; the Alleghanian fauna that of species that spread at a later date and are still spreading into new

¹ 'Summer Birds of Western Pike county, Pennsylvania.' Cassinia, 1906, pp. 16-25.

² 'Laws of Temperature Control of the Geographical Distribution of Terrestrial Animals and Plants.' National Geographic Magazine, Vol. VI, 1894, pp. 229-238.

territory, while the Carolinian birds are the laggards in this northward movement. Each group or fauna has become more or less adapted to certain characteristic conditions within the area in which they have established themselves as breeders. Some of the Carolinian species, as the Cardinal, the Carolina Wren, the Tufted Titmouse, and the Turkey Buzzard show but a slight tendency to recede from their breeding range during the winter, owing, no doubt, to the less northerly position which they have attained. Toward the northwest where a wide expanse of territory has been open since the Glacial Period many species of birds which breed widely throughout the Transition zone have spread as far north as the Great Slave Lake, reaching even to the edge of the Barren Grounds.¹

The problem as to the primitive centers of distribution from which our bird fauna was originally derived has been so ably set forth by Dr. J. A. Allen in his article on 'The Geographical Origin and Distribution of North American Birds, considered in Relation to Faunal Areas of North America',² that there is little left to say upon the subject. Students of ornithology and of geographical distribution in general owe Dr. Allen a lasting debt of gratitude for his comprehensive presentation of the facts and his illuminating deductions therefrom. It would appear from Dr. Allen's review that sometime during the Tertiary Period, possibly as early as the late Miocene, there was a spreading out toward the east of certain types of birds which find their center of development to-day in the Plateau Region of southwestern North America and Mexico. Such forms as the Chewink, the Thrasher, and the Bluebird are certainly of plateau origin and the same is probably true of the Bob-white and the Wild Turkey. A second and large element in our eastern bird fauna is of tropical origin, derived from Middle and South America. To quote Dr. Allen³: "Our Vultures, several genera of our Hawks and Owls, our Cuckoos, most of our Woodpeckers, our Nighthawks, Whippoorwills, Swifts, and all of our Hummingbirds; all of our Flycatchers, Orioles, and Blackbirds,

¹ See Preble, *North American Fauna*, No. 27. 'A Biological Investigation of the Athabasca-Mackenzie Region.' 1908.

² *The Auk*, Vol. X, p. 97. April, 1893.

³ Dr. Allen, in his paper, is speaking for the entire country, not the eastern part alone, to which the present article is confined.

and our Vireos and Tanagers; many of our Sparrows and Grosbeaks; all of our Gnatcatchers, and the Mockingbirds, some of our Wrens, and a few of our more southern genera of Warblers, as the Yellowthroats and Redstarts," are clearly of tropical origin. Probably this influx of plateau and tropical types into the eastern region was a very slow and gradual movement which took place during and after the addition of the marginal Tertiary seafloor to the southeastern portion of the continent, which increased the land area to the extent of the present southern and Atlantic coastal plain. Much of Cuba, the peninsula of Yucatan, and the eastern seaboard of Mexico was uplifted about this time. A third element appears to have had its origin within the limits of the region itself, though many of the genera are represented by numerous species in the western portion of the continent. Of the more strictly eastern genera may be mentioned *Dolichonyx*, *Mniotilta*, *Protonotaria*, *Helinaia*, *Helmitherus*, *Helminthophila* (the larger number of species), *Dendroica* (mainly eastern), *Siurus*, *Oporornis*, *Sylvania*, *Galeoscoptes*, *Cistothorus*, and *Telmatodytes*. The fourth element in our bird fauna is the Old World boreal group of genera already mentioned and a number of species of pronounced Old World affinities, as the Robin, the Hylocichline Thrushes, the Titlark, the Barn, Cliff, and Bank Swallows, the Shrikes, Crows, and Shore Larks, which have been more or less modified from Palæ-arctic types.

It is next to impossible to say in which portion of the continent many of the purely indigenous or autochthonous forms had their origin, for they are spread across the land from ocean to ocean in a succession of closely allied species or as local races. This is especially true of most of our genera of indigenous sparrows. Undoubtedly there occurred sometime during middle and late Tertiary times an extension of plateau types into the humid Eastern Province, and, conversely, a spread of eastern forms into the arid districts of the Plateau region, while at the same time an influx of tropical forms made their appearance, coming probably in the main from a tropical land area in the southwest and following the widening Gulf margin of the continent. How far north this preglacial bird fauna of diverse origin may have spread it is impossible to say, but some forms, even of tropical origin, undoubtedly

reached a high latitude, very probably during the warm Miocene and early Pliocene times, and their descendants may possibly now be represented by those migrants which breed far within the limits of the Boreal Zone. During Miocene times there were extensive land connections between Asia and Northwest America and very likely a much closer land relation between Europe and America. It was during this time, no doubt, that the influx of our Palæarctic types occurred, and it is a significant fact that all of these genera are of extensive range and of markedly northern distribution, such for example as the Passerine genera *Merula*, *Regulus*, *Parus*, *Sitta*, *Certhia*, *Anthus*, *Hirundo*, *Petrochelidon*, *Riparia*, *Ampelis*, *Lanius*, *Pinicola*, *Carpodacus*, *Loxia*, *Acanthis*, *Passerina*, *Calcarius*, *Corvus*, and *Otocoris*.

Throughout an immense lapse of time, time that must be reckoned in hundreds of thousands of years, during which the great Keewatin and Laurentide glaciers pushed their ice sheets beyond the present site of the Great Lakes and the Mohawk Valley, forcing southward the animal and plant life into an area of high biotic tension, a widespread change in types must have taken place. The more primitive forms have undoubtedly disappeared. Only occasionally may we pick up a trace of this ancestry in some fleeting juvenal phase of plumage. Modifications of type went on; differentiation into new genera, species, and varieties through molecular changes in pigmentation, in size and shape of bill and feet, of wings and tail, and in the deep-seated structure of the germ plasm. Diversity of structure went hand in hand with diversity of habit and of habitat. It was a period of profound environmental moulding, intensified by the effect of the glaciers on the land and its life. From our limited point of view the array of species and varieties which we see to-day seem peculiarly stable in their features and their adaptations. But the dynamic influences of environment are ceaseless if inconspicuous. Species and faunas alike are but passing phases in the vast cosmic processes of a continent's history.

THE USE OF THE WINGS AND FEET BY DIVING BIRDS.¹

BY CHARLES W. TOWNSEND, M. D.

BIRDS that dive and swim under water may be divided into two main classes,—those that habitually use the wings alone for subaqueous propulsion, and those that use the feet alone. The following paper includes my own observations which have been made only on wild birds and have been recorded at the time, and of records given me by other observers, as well as of those collected from literature. These two last named include observations on captive birds in tanks, which I believe are of value, for, as we shall see, the birds that habitually use their wings alone under water when in the wild state, and those that habitually use the feet alone, follow this rule even when confined.

In watching wild birds diving I have concluded that those that spread their wings just as they enter the water, use them under water, while those that keep the wings tightly pressed to the sides, and often execute graceful curves in diving, sometimes leaping clear of the water, depend on the feet alone. The truth of this conclusion I have confirmed in some instances by observing the bird under water; in other instances the conclusion has been borne out by the observation of others, so that the rule is, I think, a good one. Since formulating this rule I have found that Edmund Selous (15) expresses this same idea when he says: "This opening of the wings in the moment of diving is, I believe, a sure sign that they are used as fins or flippers under water." And again (16): "On the other hand cormorants, shags, and mergansers, birds which do not use their wings in this way, dive in a quite different manner. Instead of the sudden, little, splashy duck, as described, they make a smooth gliding leap forwards and upwards, rising a little from the water, with the neck stretched out, and wings pressed close to the sides to enter it again back foremost, like a curved arrow, thus describing the segment of a circle."

In the Loons and Grebes, the wings are small, but the legs are large and powerful. The femur is short and stout, thoroughly

¹ Read before the Nuttall Ornithological Club, February 15, 1909.

imbedded in muscular tissue, while the tibia is long and provided with a crest or keel on the anterior surface of the proximal end, to which the powerful muscles that move the tarsus and toes are attached. In the Grebes there is a very large patella. In these respects this group resembles the fossil *Hesperornis*, a toothed bird with wings represented by mere vestiges, but one that was strongly specialized for propulsion through the water by means of the feet alone.

The Loon and the Red-throated Loon in diving keep the wings closely pressed to the sides, and disappear below the surface without a splash, propelled apparently by the leg action alone. I have not been able to see these shy birds under water, but the inference that they do not use their wings there is confirmed by Mr. C. H. Townsend (25) who says in regard to a tame Loon observed in the New York Aquarium: "In exploring the bottom of the pool, or in pursuit of Killifishes it swam under water *with its wings closely folded* — never in use." The italics are his. The pool in which the Loon was confined was of ample size to display the agility of both bird and fish; it was twenty-eight feet long and three feet deep. Evans (3) states positively both of Loons and Grebes that "when submerged they do not use the pinions." C. Lloyd Morgan (27) says: "It must be remembered that Grebes and divers do not use the wings for progression under water." Lea (8) says of the Loon: "It uses its large webbed feet only, when swimming [under water]."

Although progression by the feet alone seems to be the rule in this group, yet it is a fact that at times the wings also are used. Thus Mr. C. Wm. Beebe, whose opportunities at the New York Zoölogical Park are unusually great, writes me under date of Nov. 6, 1908, that "Grebes and Loons do [use their wings] at times of emergency to turn quickly, or get up a burst of speed."

Mr. Wm. Brewster tells me, and the observation has been confirmed by others, that Loons in diving under boats to avoid being hemmed in, or in hurrying from their nests, use their wings as well as their feet, and this I think has given rise to the idea that they always use their wings. I have also been told by those who have observed young Loons, that they use both wings and feet in diving. A note of this sort was given me by Mr. F. H. Allen, who was impressed by the "quadropedal action" of the young bird under water.

I have watched Horned, Holboell's and Least Grebes diving, and as in the case of the Loons the wings are always kept closely pressed to the side. While the Grebes are able to sink mysteriously in the water, or to dive with very little motion of the body, they often leap clear of the water and execute graceful curves or arcs as they descend into the water. At such times the feet are stretched out behind. In the shallow water of a pond at close range I have seen the powerful leg strokes of the Least Grebe as it progressed under water, while the wings were seen to be motionless at the sides. On several occasions at Ipswich I have been treated to an excellent view of Horned Grebes as they dove, borne up in the clear transparent water of an advancing wave before it broke on the beach. In this case the wings were not in use, they were pressed close to the sides, while the Grebes advanced rapidly by leg strokes alone.

Joseph Kittredge, Jr. (7) in describing the actions of a Horned Grebe in a small tidal pool says: "He dove immediately.... In this case certainly, he did not use his wings in swimming." Evans, as already quoted, states that Grebes do not use their wings under water, and in another place (4) he says: "in diving the feet alone act as oars." Mr. A. C. Bent in reply to a question on this subject kindly wrote me as follows: "While collecting in the big Grebe rookeries in Saskatchewan I had ample opportunities to observe the Western Grebes swimming under water at short range, often almost at my feet; I am quite sure that they generally swam with the wings closed, and swam very rapidly. I am quite sure that I have seen the Loons do the same thing, though I have no doubt that they both use their wings occasionally."

Very different is the case of the Alcidae, the Auks, Puffins and Guillemots, birds with stout rounded bodies and short necks. In all the members of this family that I have seen, the wings of the diving birds are not pressed to the sides but spread out for action as they go below the surface, and I have actually seen the wings used under water in some instances. The Puffin on the Labrador coast allows of close approach, and one can plainly see the wings used vigorously as the bird descends under water. That the wings alone are used is stated by Selous (17) who says: "I have been able to follow the Puffin downwards in its dive, and at once noticed that the legs, instead of being used, were trailed behind, as in flight,

so that the bird's motion was a genuine flight through water, unassisted by the webbed feet."

The Black Guillemot or Sea Pigeon plainly uses its wings under water, for it goes down with a very obvious flop, spreading both wings as if to push the water away. Selous (22) says: "In swimming under water the Black Guillemot uses its wings only — the rose red legs trail behind it, a fading fire as it goes down." Mr. James L. Peters writes me that he "watched a Black Guillemot off Nahant. We were almost directly above him and, while we could see his wings nicely, his feet were quite hidden. When he dove he spread his wings and used them under water."

The Razor-billed Auk and the Murres spread their wings in diving, but I have not seen these birds under water. Selous (24) says of these birds: "Whilst watching the Guillemots [Common Murres] on the ledges, one of them flew down into the sea, just below, which was like a great, clear basin, and thus gave me the first opportunity I have yet had of seeing a Guillemot under water. It progressed, like the Razorbill and Puffin, by repeated strokes of its wings, which were not, however, outspread as in flight, but held as they are when closed, parallel, that is to say, roughly speaking, with the sides, from which they were moved outwards, and then back, with a flap-like motion, as though attached to them all along. Thus the flight through the water is managed in a very different way from the flight through the air." In another place (20) he says: "Razorbills also dive briskly, opening the wings. . . . One remarks then that the wings are moved both together — flapped or beaten — so that the bird really flies through the water. In flight, however, they are spread straight out without a bend in them, whereas here they are all the while flexed at the joint, wing raised from and brought downwards again towards the sides in the same position in which they repose against them when closed."

Of the Dovekie or Little Auk I have had the opportunity to make some interesting observations. In diving the wings are spread out as in others of the group, and, from a near-by rock, I have plainly seen it using its wings as it swam under water. As to the feet I cannot say, for I have no note nor distinct remembrance as regards these members. One is apt to assume that the feet as well as the wings are used in these birds under water, but the careful

observations of Selous on other members of the group show that the wings only are used.

The Great Auk, with wings reduced to flipper-like proportions, doubtless advanced rapidly through the water by the action of these members only.

The Penguins, although entirely distinct from the Auks, fly through the water with their attenuated flipper-like wings, and, according to Beebe (1) who has watched them in tanks, "make but little use of their feet in swimming, only occasionally aiding the tail in steering." Evans (5) says: "When submerged, the wings act as paddles with alternating rotary action, and the feet as rudders, but on the return to the surface the latter naturally become propellers." Lea (9) says of Penguins: "Their flight may be watched and studied in the large glass tanks at the 'Zoo'. . . . With short, rapid strokes of its paddle-wings it darts through the water leaving a trail of glistening bubbles behind, and shoots forward with the speed of a fish, turning more rapidly than almost any bird of the air by the strokes of the wings alone, the legs floating apparently inert in a line with the gleaming body, or giving an occasional upward kick to force it to greater depths."

Some of the Terns, in plunging for fish, disappear entirely under water, and as their feet are comparatively feeble, and as their wings are partially open in the plunge, it is possible that these latter are used to some extent in aiding their progress, although it is probable that the impulse of the plunge alone is all that is necessary.

Among the Tubinares, some of the Petrels and the Shearwaters plunge under water. Darwin (2) says of a diving Petrel, *Pelecanoides berardi*: "When disturbed it dives to a distance, and on coming to the surface, with the same movement takes flight. After flying by the rapid movements of its short wings for a space in a straight line, it drops, as if struck dead, and dives again. . . . It would undoubtedly be mistaken for an auk, when seen from a distance, either on the wing, or when diving and quietly swimming about the retired channels of Tierra del Fuego." Lea (10) states of the Capped Petrel, *Æstrelata hæsitata*, now nearly extinct: "It poises itself in the air for a moment at a height of twenty or twenty-five feet, and then, folding its wings, takes a header into the water. The actual plunge is made with the wings open, and

they are used under water much in the same manner as during flight."

The plunge of the Gannet, with wings partly open, is so swift and often from so great a height, that it seems probable that there is no need of either wings or feet under water, but that the initial impulse of the plunge, which must be greater than that of gravity alone, is sufficient to enable the bird to catch its prey.

Cormorants execute graceful curves in diving with wings close pressed to the sides, often throwing themselves clear of the water with their powerful feet. I have never seen them under water but have conclusive evidence from literature on this point. F. W. Headley (6) says: "The Cormorant uses his feet alone to propel him [in diving] striking with both simultaneously, and holding his wings motionless, though slightly lifted from the body. The position of the wings must have given rise to the idea, common among fishermen, that the Cormorant flies under water. . . . But when you see him in a tank you can have no doubt that the legs are the propellers." Mr. Beebe, in a letter, confirms this observation from his experience with Cormorants in tanks. Selous (23), speaking of Shags, both adults and full grown young, observed in caverns in the Shetland Islands says: "Others, whose young were still with them on the nest, although full-fledged and almost as big as themselves, plunged, attended by these into the water. . . . It was easy to follow these birds as they swam midway between the surface of the water and the white pebbled floor of the cavern, and I was thus able to confirm my previous conviction that the feet alone are used by them in swimming, without any help from the wings, which are kept all the while closed. I have many times observed this before, but never so clearly or for such a length of time." Lea (11) says of Shags: "This species also may be watched at the 'Zoo'. It always begins its dive by jumping up in the water and taking a header, and then strikes hard upwards with both feet. You will see that it does not use its wings at all for swimming, but holds them quite still, lifted just a little away from its body. It strikes out with both feet simultaneously, and in this differs from the Darters (*Plotus*), which adopt an alternate stroke, as you may see for yourself by visiting the Diving-birds' House at feeding-time." In this connection it is interesting to note that Cormorants

in rising into the air in flight kick away the beach or the water with both feet together. This I have proved by examining the imprints of their feet in the sand of a beach.

The Darters or Anhingas, as just referred to by Lea, use the feet alone under water.

Among the Ducks, both classes of divers are found. The American and the Red-breasted Merganser both dive like the Cormorant. They often leap clear of the water, in graceful curves, with their wings cleaving closely to the sides. At other times the leap is much curtailed, or they sink beneath the surface without apparent effort. I should infer, therefore, that the wings were not used under water, and this inference is borne out by the following from Selous (16): "The merganser dives like the shag or cormorant — though the curved leap is a little less vigorous — and swims, like them, without using the wings. His food being fish, . . . he usually swims horizontally, sometimes only just beneath the surface, and, as he comes right into the shallow inlets, when the water almost laps the shore, he can often be watched thus gliding in rapid pursuit."

The other members of this order that do not, I believe, use the wings under water are the Redhead, Greater and Lesser and Ring-necked Scaups, Whistler and Bufflehead, while those that do use the wings are the Old Squaw, Harlequin Duck, the three Eiders the three Scoters and possibly the Ruddy Duck. This list I have made out from my own observations of the way the wings are held in these birds as they dive, and in a few cases the birds have been observed under water. The only member of our eastern sea or diving ducks omitted from the list is the Canvasback, which I have never seen dive. It is probable that it acts as does the nearly related Redhead. It is interesting to notice that the two classes are grouped separately in the A. O. U. Check-List, the first class being placed together at the beginning of the list, the other class at the end of the list.

Some of these Ducks feed largely on the bottom on shellfish and crustaceans, or on vegetable matter, while a few of them feed largely on fish. The latter birds would naturally develop the swiftest form of propulsion. Mergansers, Whistlers and Buffleheads, largely fish-eating Ducks, progress by the feet alone, while

Eiders and Scoters, almost entirely bottom feeders, use the wings. Many of the others, however, cannot be divided in this way.

Redheads in diving keep their wings close to their sides and Mr. Beebe writes that these birds, as observed by him in tanks, do not use the wings under water. The Scaups, both Greater and Lesser, in the same way keep the wings close to the sides in diving, and sometimes leap clear of the water or disappear with scarcely an effort. Mr. G. M. Allen tells me that he watched a captive Ring-neck Scaup in a small pool, and was able to observe not only the clean cut leap and dive with wings close to the side, but the rapid progress under water by the use of the feet alone. The Whistler or American Golden-eye, is also a graceful diver, and, as far as I have observed, always keeps its wings close to its sides in diving. As it disappears from sight it often sends up a little spurt of water by the powerful action of its feet. I should therefore conclude that the Whistler habitually swims under water by the use of its feet alone. Mr. Wm. Brewster, however, tells me that he has seen it make use of its wings in diving, but this was probably at times when the bird was hard pressed, and it acted as does the Loon in similar circumstances. The Bufflehead also keeps its wings close to its sides in diving, and sometimes leaps clear of the water before it disappears from sight.

Old Squaws, on the other hand, open their wings before diving as plainly as do the Guillemots and the Puffins. On one occasion, while I was watching some Old Squaws sporting in the water off Nahant, chasing each other on and just below the surface, I distinctly saw the wing of one of them cut the water from below like the fin of a great fish. A Harlequin Duck, that I saw on the Labrador Coast, opened its wings as it dove. I have watched the Northern Eider, the American Eider and the King Eider dive, and all open their wings for subaqueous flight as they go down. Of the Eider Selous (15) has made some satisfactory observations. He says: "Their dive is a sudden dip down, and in the act of it they open the wings, which they use under water, as can be plainly seen for a little way below the surface."

Our three Scoters, — American, White-winged and Surf Scoters — all open their wings as they dive. I once shot and slightly wounded a Surf Scoter that was standing on the edge of the beach

at Ipswich. He took to the shallow water and dove where I could plainly see him flying along under water using his wings.

My observations of the Ruddy Duck lead me to think that although its wings are often close to the sides at the beginning of the dive, they are opened just as the bird goes under the surface. The short but strong wing in this bird would suggest adaptation for subaqueous flight.

The curious Steamer Duck, *Tachyeres cinereus*, of the Straits of Magellan, that in the adult state at least is unable to fly, but flops along the water by the use of its wings, and dives awkwardly, probably uses its wings under water. Darwin (2) says that he is "nearly sure" that this bird uses the wings alternately.¹

The group of River Ducks obtain their food by dipping their heads and necks below the surface of the water, but occasionally these birds dive. I have observed close at hand semi-domesticated decoy Black Ducks sporting together, and diving awkwardly. In this case both wings and feet were used. As regards the Mallard, the following note kindly communicated to me by Mr. Wm. L. Finley in a letter dated January 4, 1909, is of considerable interest. "While in the lake region of southern Oregon, on two different occasions I saw a young Mallard duck swimming under water. He looked to me exactly like a frog. He was not many days old. He used his little wings as if they were two front feet, and he went through the water like a streak." It is evident from the context that the feet were used as well as the wings. Teal occasionally dive, especially when wounded, but I have no observations to record as to the method used.²

The Rail family show an interesting diversity in the manner of diving. The American Coot, *Fulica*, with its large lobed feet has evidently perfected the feet method, for with its feeble wings close to its sides, it often leaps out of the water and describes an arc, the bill entering the water as the feet leave it. At other times it disappears without any leap, and all degrees between these two extremes are to be found. Mr. Beebe writes me that Coots in

¹ The alternate action of the wings has already been referred to in the case of Penguins. I have for some years been almost convinced that Chimney Swifts use the wings alternately in flight.

² I recently watched a wounded Brant dive and swim under water. In this case the wings were flapped slowly and the feet used rapidly.

tanks use the feet and not the wings under water, and Selous (18) believes that the Coot belongs "to the cormorant-school of diving." This he infers from the manner of its entering the water. He apparently has not seen it under water.

I have no observations of my own to record on Rails proper and Gallinules but Selous (21) says of the English Moorhen, *Gallinula chloropus*, that he "may follow no fixed plan in his diving, for I have certainly seen him using his feet only under water, and I believe I have also seen him using his wings." Lea (12) says of the Moorhen: "After diving, it flies through the water at a great pace."

Among the Shore-birds the young of the Spotted Sandpiper are said to use both wings and feet in diving.

The impetus of the Kingfisher is probably all that is needed by this bird in its plunge, but it is possible that it occasionally scrambles a bit with its wings under water,—its feet can hardly be of use.

Among Passerine birds the water Ousel is the only diver, and it is well known that this bird uses its wings under water, and many observers state that it uses also its feet (13).

From the result of these studies it seems reasonable to conclude that diving birds tend to specialize in two directions,—either towards the use of the feet alone, or of the wings alone. The question naturally arises as to which line is superior, which has produced the swiftest diving bird,—the line that has lead to the use of the feet alone or that which has lead to the use of the wings alone? It is evident that a method of diving which leaves the wings unimpaired in size or form for the use in the air is a desirable one, and this is possible where the feet alone are used. In most fishes propulsion is from the rear by means of the tail, for the pectoral fins, which correspond to the birds' wings, are used chiefly for balancing. When the fish swims fast these fins are kept close to the sides. Among mammals the cetaceans have developed greatest speed in diving and swimming under water, and here also the tail is the propulsive power, while the anterior extremities are used chiefly for balancing. The modern screw propeller is superior to the old side-wheeler.

In *Hesperornis* the wing is a mere vestige, reduced to a slender humerus only, without even articulating facets on the distal end.

The tibia, however, is of great strength and size, provided with a keel or crest for the attachment of powerful muscles, and the patella is enormously developed. It is evident that *Hesperornis* pursued its prey under water by means of the feet alone, and that through many generations it had gradually lost the use of the wings, which must have been, therefore, a hindrance rather than a help in its subaqueous flight. It had long since given up aerial flight. Loons and Grebes, however, although apparently allied to *Hesperornis*, do at times, as we have seen, use their wings in addition to their feet under water, yet it seems to me probable from the evidence adduced that as a rule they progress by the feet alone. The young appear to use the wings as well as the feet habitually. These facts would seem to indicate that the method of posterior propulsion in Loons and Grebes has not been long developed nor permanently fixed, and that the young show the ancestral or primitive form of locomotion. The close resemblance in the legs of the Loons and Grebes on the one hand, and *Hesperornis* on the other would suggest either a case of parallelism from similar functions, or that they were all descended from the same stock. In the 'Birds of Essex County' (26) I spoke of the Loon as "approaching the wingless conditions." The present studies would, however, lead me to believe that the Loon in perfecting the method of posterior propulsion under water, has no need to reduce the size of its wings for use there. It can, however, with advantage increase their size, provided it does not use them under water, for the wings are now so small that on calm days it is unable to rise into the air.

Cormorants on the other hand have for so long a time perfected the posterior propulsion method that they do not use the wings under water even apparently when young. In consequence they have been able to retain large wings for aerial flight. That they can develop great speed under water and are very expert fish-catchers is well known.

The other line of evolution, the subaqueous flight by anterior propulsion, or by the use of the wings alone, reaches its height in the Penguins, and probably in the extinct Great Auk, two birds widely separated genetically, but converging to the same result in this particular. Both birds in developing speed under water by the use of the wings, reduced them in size to the proportions of seal's

flippers,— most markedly so in the case of the Penguins,— thereby showing that large wings are not only unnecessary, but even a hindrance in subaqueous flight. In attaining this end they were obliged to sacrifice aerial flight. This the Penguins were able to do owing to the absence of land mammals in their antarctic breeding grounds. The same conditions existed for the Great Auk at its chief breeding place in this country on Funk Island, until the arrival of that most destructive land mammal, the white man.

The Diving Petrel of the Straits of Magellan is a bird that appears to be in danger of sacrificing aerial for sub-aqueous flight, and illustrates the inconveniences of this line of evolution. Nichol (14) says of this bird, after describing its short flights in the air and its diving: "In appearance it reminds one forcibly of the little auk. . . . The wings are very small and weak, the bird, doubtless, is losing the power of flight."

In the case of the existing Alcidae and of the other birds that habitually use the wings alone in diving, it would be interesting to determine whether they are able to progress under water as fast as those birds that use the feet alone, for the Alcidae are trying to make the same tool work for two purposes, to propel them in the air as well as in the water. One is impressed with the imperfection of their wings for both purposes, when one watches a Puffin endeavoring to get out of the way of a steamer. First the bird dives and flies under water. Then in alarm it rises to the surface and attempts to ascend into the air on its wings, but unless there is a strong wind to act on its small aëroplanes, it soon gives up the attempt and flops down into the water again. Although it would be difficult to prove, it would seem to me reasonable to suppose that the compressed pointed body of the Loon, with the air expelled from beneath the flattened feathers, would make faster progress by feet action alone, than by the wings or by the wings and feet combined, unless the wings were reduced to the proportions of flippers. It is possible that the occasional use of the wings observed in these birds may be explained by fright, which causes them to "lose their heads," and return to the ancestral form of progression, to a reptilian scramble so to speak, without increasing the speed of their progress. It could also be argued that the wings of Loons are now so reduced in size that their use in emergencies

under water is a help and not a hindrance. Experiments on captive birds in tanks might determine these facts.

That Loons are able to progress faster under water than on the surface I have concluded from such observations as the following (26): "Thus on one occasion I was watching a Loon swimming about, dipping his head under water from time to time on the lookout for food. The cry of another Loon was heard at a distance and my friend immediately dove in the direction of the other, and, appearing on the surface for a moment, dove again and again until he reached his companion. At another time on the Maine Coast while watching a flock of young Red-breasted Mergansers swimming off the shore, I noticed a movement as of a large fish on the water outside. The Mergansers at once flapped in alarm along the surface of the water towards the shore where I was hidden, and I soon saw that a Loon was chasing them, following them under water." Theoretically a Loon should be able to go faster under water than on the surface, for on the surface the bird is retarded by the waves in front and the eddies behind, and the faster it goes the more it is retarded by these factors. The subject of the resistance of submerged bodies has been exhaustively studied by naval architects, and it has been shown that a properly shaped body completely submerged under ideal circumstances with the wave eliminated meets with little resistance besides friction. The fact that a Loon when swimming rapidly on the surface is apt to depress its body in the water so that its back is awash seems to favor this contention. It may be argued that the bird does this to avoid observation or to escape being shot, but it certainly swims faster when thus submerged. Under water the diving bird has a great advantage in being able to assume a shape best adapted to cleaving the liquid medium.

Incidentally it may be remarked that the Loon, in perfecting its legs for use under water, has disabled itself for walking on the land, but as it usually builds its nest on or close to the water, it can well afford to sacrifice terrestrial locomotion.

The combined use of wings and feet, a reptilian form of progression, would naturally be found among birds that had not fully specialized in either direction. Among living birds the Cormorant and the Penguin represent the extremes of specialization for the

posterior and anterior extremity respectively. Where either habit is not firmly established we should expect at times a return to the primitive method, and we should expect to find it in young birds. This is well shown in the case of the Loon. We should expect to find it at all times in beginners in the art of diving, *i. e.*, among birds whose ancestry in the diving line is not a long one. The Mallard, the Black Duck, the Gallinule, the Spotted Sand-piper and the Water Ouzel may perhaps illustrate this contention.

In conclusion the following tentative inferences from these preliminary studies may be set down.

1st. That progression by both the wings and feet under water in diving birds is the primitive method, and is therefore to be looked for among beginners and young birds.

2d. That specialization towards the use of the wings alone leads to a diminution in the size of the wings, and finally to a form of bird that is flightless in the air; for wings of flipper proportions, too small for aerial flight, are more efficient than large wings for subaqueous flight, as witness the Great Auk and Penguins.

3d. That specialization towards the use of the feet alone is probably best adapted for the most rapid progression under water, and this method may leave the wings undiminished in size for use in the air. The apparent exception, *Hesperornis*, with powerful feet but with wings degenerated to vestiges through disuse, serves but to confirm the inference of the superiority under water of feet action alone.

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A REPRINT OF THE ORNITHOLOGICAL WRITINGS
OF C. S. RAFINESQUE.

PART II.¹

BY CHARLES W. RICHMOND.

RAFINESQUE, with his brother, left Leghorn in March, 1802, and landed in Philadelphia on the 18th of April. He at once began to botanize, collect specimens, and make drawings. He says ('Life of Travel,' p. 17): "My brother had become a sportsman, and procured me many birds. I wanted to undertake the Ornithology of the United States, finding many of them new or unknown, or badly described. I continued also to study the Snakes and Reptiles, communicating some of them to Daudin for his work on Reptiles." So, it appears, Rafinesque narrowly escaped being the Father of American Ornithology. However, this plan, like many others projected by him, fell through, and on his first visit to the

¹ For Part I see *antea*, pp. 37-55.

United States he actually published only one item on the native birds, a note on the food of the Canvasback Duck. He lost no time, however, in describing four species of birds from Java, which he found exhibited in Peale's Museum, in Philadelphia. These descriptions he communicated to Daudin, his first scientific correspondent, who inserted them in the 'Bulletin' of the Société Philomathique de Paris, where they appeared as his earliest published writings.

Bulletin des Sciences, par la Société Philomathique, III, No. 67, 1802. (Vendémiaire, an 11 de la République.¹)

[p. 146.]

Notice sur deux nouvelles espèces des genres picoïdes et turnix de l'île de Java, décrites à Philadelphie, dans le cabinet de M. Peales, par le C. RAFINESQUE.

I°. Le picoïde à dos rouge.

Il est long de six pouces, et diffère essentiellement du picoïde de Sibérie, déjà connu. Le bec est d'un brun clair, avec son extrémité blanchâtre et peu aigue. Le plumage est presque entièrement noir, varié sur la tête de taches oblongues, sur la gorge et la poitrine de taches plus grandes, plus arrondies et toutes de couleur blanche. Le ventre est varié un peu irrégulièrement de blanc et de noir; une bande blanche s'étend de la base du bec aux épaules où elle s'élargit. Le menton est blanc et sans presque aucune tache. Le dos est jaunâtre à sa moitié supérieure, et rouge à l'inférieure. Les couvertures alaires sont d'un jaune olivâtre; les grandes plumes alaires sont brunes, et les petites, brunes, bordées d'olivâtre. La queue a ses plumes noirâtres, acuminées. Les pieds sont brunâtres, avec deux doigts antérieurs, réunis à leur base, et un doigt derrière.

2°. Un autre oiseau tridactyle, dont M. Peales n'a pas encore pu déterminer le genre: il a quelque analogie par sa forme avec les cailles à trois doigts; mais son bec l'éloigne des Tétrins et des perdrix, et il diffère aussi des pluviers par ses jambes entièrement couvertes de plumes (1).

¹ At this time the society was publishing one number per month. No. 67 was for the period extending from Sept. 22-Oct. 21, 1802.

Il est long de quatre pouces. Son bec est de couleur de corne, comprimé, allongé, avec les deux mandibules convexes, la supérieure ayant son extrémité pointue et dépassant l'inférieure par un petit crochet: les narines sont linéaires et recouvertes par une petite membrane. La tête est brune, pointillée de blanchâtre; le menton et le gosier sont noirâtres; la gorge, la poitrine et les plumes humérales sont fasciées transversalement de blanchâtre et de noirâtre. Le ventre est roussâtre, le haut du dos d'un bai clair, le reste brun fascié transversalement de bai et de noirâtre, ainsi que les couvertures alaires; les plumes alaires sont brunes, bordées de blanchâtre en dehors. La queue est très-courte et brune: les pieds sont cendrés, à trois doigts, tous antérieurs et entièrement séparés, sans membrane.

F. M. D.

(1) Cet oiseau est un turnix, voisin de celui de Madagascar; j'en possède un dessin. (*Note du Redacteur.*)

These birds were not provided with scientific names at the time, but in 1814 (as shown beyond) Rafinesque named them *Picoides (Dinopium) erythronotus* and *Turnix javanica*, respectively. The first description applies to the bird universally known as *Tiga javanensis*, originally described by Ljungh, in 1797, as *Picus javanensis*; the second is *Hemipodius pugnax* of Temminck, 1815. As the generic name *Tiga* Kaup was not proposed until 1836, it follows that *Dinopium* should replace it, while *Turnix pugnax* will become *T. javanica*.

Bulletin des Sciences, par la Société Philomathique. III, No. 68, 1802. (Brumaire, an 11 de la République.¹)

[p. 153.]

Notice sur une hirondelle et un figuier de l'île de Java, décrits à Philadelphie, dans le muséum de M. Peales, par le C. RAFINESQUE.

I^o. L'hirondelle à longues ailes. *Hirundo longipennis*.

Elle est longue de sept pouces et demi; le bec est petit et noir. Le dessus du corps est noirâtre, à reflets bleuâtres; tout le dessous du corps, ainsi que le bas du dos, sont d'un cendré sali. Les ailes

¹ Brumaire, an 11, extended from Oct. 22–Nov. 20, 1802.

sont très-longues, très-aigues et noirâtres, à reflets. On voit une tache remarquable, cendrée ou blanchâtre, salie intérieurement vers le dos. La queue est noire, très-longue, très-fourchue, avec la penne extérieure de chaque côté aussi longue que les ailes.

2°. Le figuier à queue cunéiforme. *Sylvia cuneata*.

Il est long de cinq pouces. Le bec est de couleur de corne, avec la mandibule supérieure anguleuse, et presque entièrement brune. Le dessus du corps est d'un gris olivâtre, avec le gosier blanchâtre, les épaules cendrées, la poitrine et le ventre jaunâtres. Les ailes sont courtes, à pennes brunes bordées de grisâtre; plusieurs plumes sus-alaires sont terminées de blanchâtre; la queue est cunéiforme, brune en dessous, avec l'extrémité inférieure des pennes latérales blanche, d'un brun clair en dessus, avec l'extrémité inférieure de chaque autre penne blanche, et marquée d'une tache arrondie d'un brun foncé.

F. M. D.

Hirundo longipennis is the well known *Macropteryx* (or *Hemiprocne*) *longipennis*; and *Sylvia cuneata* is in all probability the species later described by Horsfield as *Prinia familiaris*.

The Medical Repository (New York). Second Hexade. II, No. 2, 1804.

[p. 208.]

CANVASS-BACK DUCK AND ITS FOOD.

Extract of a letter from Mr. C. S. Rafinesque to Dr. Mitchell, dated Philadelphia, Sept. 7, 1804.

"Having seen in the Medical Repository the mention made of the canvass-back duck and its food (Hex. I. vol. v. p. 342), I have paid particular attention to ascertain what both were; and it is with some degree of pleasure I am able to tell you that I have been successful enough to find their true scientific names. The first is certainly the *anas ferina* of the ornithologists, *le milvuin* of Buffon and the French authors, which is found in Europe, Asia and America. I have seen it myself in Italy and France, where it is reckoned a good game, but not so dainty as it is thought here. I have examined four of them in Philadelphia, which came from the neighbourhood of

Havre de Grace, where they are still plentiful in winter. When there, I was shown the plant or grass they feed upon, and found it to be the *Valisneria Americana*, a new species, somewhat different from the *Valisneria spiralis* of Europe. It covers the bottom of the shallow parts of the Susquehannah, and the head of the bay, from which its leaves nearly reach the surface of the water. The root shoots, in the fall, fleshy and almost esculent buds or protuberances, which stand during the winter, and are the chief food of the *anas ferina* in those parts. Those that escape them send forth next spring new leaves, and sometimes stems also.— The *Valisneria Americana* is called channel-weed in the river Delaware, and canvass-back-duck-food in the Susquehannah.”

In 1810, Rafinesque published his ‘Caratteri,’ a pamphlet of 105 pages, and doubtless one of the commonest of his works. This was apparently issued in blue paper covers (one copy seen by me is in this state), and without the list of writings that occurs on some of his later tracts.

The matter relating to birds is reprinted below.

Caratteri di alcuni nuovi generi e nuove specie di Animali e Piante della Sicilia con varie osservazioni sopra i medesimi. Opuscolo del Sig. C. S. Rafinesque Schmaltz. Palermo. 1810. (Dedication dated “Palermo 1. Aprile 1810.”)

[p. 5.]

CAPITOLO II.— GLI UCCELLI

2. *Sp.* FALCO *Erythruros* — Tutto bigio con il groppone e le coscie rosse ferruginose, rostro giallastro, nero alla punta, piedi e cera arancini.— *Oss.* questo piccolo *Falcone* o più tosto *Smeriglio* é raro, lo ho sentito nominare *Falco Palumbo* da alcuni Cacciatori, egli si ritrova vicino a Palermo e giunge appena alla lunghezza di un piede; è molto grazioso e ben distinto da qualunque altra specie del numeroso genere a cui appartiene.

3. *Sp.* ARDEA *Xanthodactyla* — Tutta bianca,

con un ciuffetto cadente dietro la testa, rostro e piedi neri, diti ed iride gialli, spazio nudo frà il rostro e l'occhio cerulescente.— *Oss.* Questo *Airone* appartiene alla divisione delle *Garzette* ed arriva alla lunghezza di tre piedi, fù ucciso vicino a Licata e ho cognizione che si ritrova pure in Egitto ed in Toscana, dove è di passaggio come in Sicilia.

4. *Sp.* ARDEA *Lucida* — Tutta bianca lucente, con ciuffetto, rostro, e piedi gialli, spazio nudo fra il rostro e l'occhio bigio — *Oss.* Quest'altra *Garzetta*
[p. 6.]

fù ritrovata vicino a Trapani ed è di minor mole della precedente; è pure di passaggio.

5. *Sp.* TRINGA *Picta* — Rostro nero, piedi olivastri, al di sopra fosca macchiata di bianco, al di sotto bianca macchiata di fosco al petto e fianchi, penne dell'ale fosche marginate di bianco e fosco — *Oss.* Si chiama dalli Cacciatori *Gadduzzu dipintu*, e non é rara in primavera.

6. *Sp.* EMBERIZA *Atrata* — Rostro, piedi, dorso e fianchi nerastri, fulvastra al disotto, penne della coda nere, l'esteriori marginate di bianco.— *Oss.* Questa sorte di *Ortolano* è raro e di passaggio nella primavera ed età.

7. *Sp.* FRINGILLA *Olivacea* — Tutta olivastra, un poco macchiata di fosco sopra il dorso, e bianchiccia al ventre, rostro e piedi fulvi, penne della coda marginate di fosco.— *Oss.* Ho trovato questo *Pinzone* vicino a Palermo.

8. *Sp.* MOTACILLA *Erythroürus* — Bigia al disopra, faccia, gola, petto, rostro e piedi neri, ventre biancastro, groppone e coda fulva, le sue penne interiore fosche.— *Oss.* Questo Uccellino si chiama in siciliano *Cudirussa* come pure la *M. Phenicurus* che pure vi si ritrova e di cui differisce nel non avere ne la fronte bianca ne il petto fulvo &c. ambidue appartengono al vero genere delle *Motacille* ultimamente riformato col tozlierne tutte le *Capinere*, per formarne il Genere *Sylvia*.

9. *Sp. SYLVIA Fulva* — Fulva ferruginosa, biancastra al disotto, groppone giallastro, rostro e piedi bianchicci.— *Oss.* Questa é una della grande specie di *Capinere*, frequenta le montagne e piccoli boschi, e vi é stabile.

10. *Sp. SYLVIA Juncidis* — Penne fosche marginate di fulvastro al disopra, gola, spalle, fianchi e coscie fulvastre, petto e ventre bianchiccio, coda cuneiforma sulle penne fosche alla base, nere all'estremità e terminate di fulvo, le due più esteriori lo sono di bianco; uno spazio nudo fra l'occhio e l'orecchie, rostro fosco, piedi bianchicci.— *Oss.* Mo visto questa piccola *Capinera*

[p. 7.]

vicino alla Roccella saltellare sopra i giunchi nei luoghi, umidi; l'avevo pure osservata nelle vicinanze di Livorno, insieme colla seguente.

11. *Sp. SYLVIA Capinera* — Sommità del capo e gote nere, dorso fosco testaceo, al disotto bianco cenerizio, penne della coda nere, l'esteriori marginate e terminate di bianco, rostro fosco, piedi fulvi.— *Oss.* Essa appartiene alla divisione delle *Capinere* col capo colorito al disopra e si distingue della *S. Atricapilla* nell'avere il nero più esteso, nel colore dei piedi, dell'ale &c,

12. *Sp. SYLVIA Xanthogastra* — Bigia olivastro al disopra, gialla al disotto, ale e coda fosche, rostro fosco al di sopra, giallastro al di sotto, piedi pionbini.— *Oss.* Questo piccolo Uccellino è molto grazioso, egli si ritròva nell'autunno insieme colli quattro sequenti, e vengono tutti confusi sotto il nome di *Beccaficu* che allora si dà a tutte le *Capinere* che mangiano i fichi.

13. *Sp. SYLVIA Rhodogastra* — Bigia scura al disopra, rosastra al disotto, rostro, ale e coda fosche, le penne esterne della coda terminate di bianco, piedi fulvini.

14. *Sp. SYLVIA Turdella* — Bigia rossiccia scura, biancastra al disotto, rostro e piedi foschi.

15. *Sp. SYLVIA Meleuca* — Capo nerastro al di sopra, dorso fulvo fosco, biancastra al disotto, rostro nerastro, piedi fulvi foschi, penne dell'ale fosche, penne della coda nere e l'esteriori bianche all'estremità.— *Oss.* Essa ha qualche somiglianza colla *S. Capinera* n. 11; ma è più piccola, hà il nero del capo diversamente esteso &c.¹

Précis des découvertes et travaux Somiologiques de M^r. C. S. Rafinesque-Schmaltz, entre 1800 et 1814. (Consists of a letter addressed to "M^r. Ch. H. Persoon M.D." of Paris, and dated June 3, 1814.)

The only ornithological matter in this work appears to be the following, on page 14:

2. *Classe Ornithia — Les Oiseaux.*

8. *Esp. Numenius aterrimus.* Bec, pieds et tout le corps parfaitement noir.— Obs. En Sicile, vulgairement *Addarana*.

9. *Sylvia Azuricollis.* Bec et pieds noirs, dos gris-brun, cou et partie supérieure du poitrail azurés, la partie inférieure rougeâtre, ventre olivâtre.— Obs. En Sicile et en Espagne.

10. *Falco torquatus.* Bec bleu, cere pieds et dos bruns, demi collier roussâtre, blanc en dessous avec des taches brunes sur le ventre, queue rayée de ferrugineux.— Obs. En Sicile, vulgairement *Falchettu*.

The 'Précis,' 'Principes fondamentaux,' and 'Analyse' were originally issued in brown paper covers, on the second and following pages of which is given a list of the author's writings. The first item being of interest to ornithologists is here reproduced:

[p. 2 of cover.]

I. Description de 4 nouvelles espèces d'Oiseaux de l'Ile de Java, observés dans le museum de Mr. Peale à Philadelphie,

¹ I have not attempted the identification of the above species, nor of the three that follow.— C. W. R.

Turnix javanica, *Dinopium* (*Picoides*) *erythronotus*, *Hirundo longipennis* et *Sylvia cuneata*.— Inséré dans le Bulletin des Sciences 1803, num. 67. et 68.¹

Turnix javanica, *Dinopium* (*Picoides*) *erythronotus*, and the generic name *Dinopium* are new here.

Principes Fondamentaux de Somnologie, 1814.

The only items of interest to ornithologists are the substitution of two names, *Anseria* and *Apodium*, for *Anser* and *Apus*, viz.:

[p. 27.]

Obs. Cette règle se lie avec la précédente & elles se supportent réciproquement, les Genres *Talpa* L. & *Catalpa* J. *Bromelia* L. & *Melia* L. *Cancer* L. & *Anser* Brisson, *Sinapis* L. & *Apis* L. en sont des exemples; il faut dans tous les cas semblables conserver le nom antérieur (à moins qu'il ne soit d'ailleurs moins convenable) & modifier les autres; ainsi il faudra adopter *Catalpium* R. *Ananas* T., *Anseria* R. & *Apicula* R. au lieu de *Catalpa*, *Bromelia*, *Anser* & *Apis*.

[p. 28.]

Obs. Ainsi *Mitella* L. *Mitchella* L. & *Michelia* L. peuvent être conservés; mais parmi *Apis* L. *Apus* Cuvier, *Apium* L. & *Apion* Herbst, on ne doit conserver qu'

[p. 29.]

Apium L. les autres doivent être changés en *Apicula* R. *Apodium* R. & *Apionus* R.

Specchio delle Scienze o Giornale Enciclopedico di Sicilia. Tom. II, No. XI, I Novembre, 1814.

[p. 132.]

Arrivo delle Lodole vicino Palermo nell'autunno.

Le Lodole (*Alauda vulgaris* L.) sono degli uccelli

¹ These numbers were published in 1802, as noted above.

migratori, i quali vivono e nidificano nell'està sopra il continente europeo, ma lo lasciano nell'autunno, almeno in gran parte, per albergare nell'inverno in Sicilia e nella Barberia. Il loro arrivo principia in Sicilia circa l'equinozio d'autunno, ed il loro passaggio dura quasi un mese: trà tutte le parti della Sicilia non vi è luogo dove giungano in simile abbondanza come nel golfo di Palermo, volano in piccole bande di 20 sino a 50, ma il numero di queste bande è tale che nei giorni di passaggio abbondante, pare che venissero alla fila l'una dell'

[p. 133.]

altra: l'ora del passaggio dura tutto il giorno, ma il tempo più abbondante è dopo il mezzodì, particolarmente quando soffia un moderato vento di tramontana, grecale o maestrale, con un altro vento giungono in piccolissimo numero, e non ne arriva quasi mai con un vento impetuoso o collo scirocco e libeccio. Volano a fiore d'acqua e con volo lento ma uguale, e non s'innalzano nell'aria che quando giungono sopra la riva. Io hò calcolato che nelle giornate di gran passaggio ne devono giungere quasi un milione, e sicchè si può supporre ragionevolmente che in tutta la stagione arrivano in Sicilia nel solo golfo di Palermo (spazio al più di 20 miglia) più di dieci milioni di Lodole.

Questo passaggio somministra ai palermitani una piacevole ed abbondante caccia; un numero sorprendente di cacciatori di spargono sopra tutto il litorale, o vanno in barche ad incontrarle nel mare; vi sono in certe giornate quasi cento barche nel golfo e più di tre cento cacciatori sulle rive, i quali fanuo quasi un fuoco continuo di modo che le vicinanze di Palermo presentano l'aspetto ed il rumore di una battaglia o vivo attacco di fucilate: alcuni trà questi cacciatori giungono ad ammazzare un centinaio di Lodole in poche ore. Il nome che essi hanno in Sicilia a questi uccelli è quello di *Lonora*. Non pare che il rumore delle fucilate le spaventi a gran distanza, giacchè continuano a venire dove vi è il più vivo fuoco; ma da vicino fà deviare le bande del

loro corso o le fà spartire, fuggendo di quà e di là ed anche ritornando nel mare, ma per rintracciare un punto del lido meno pericoloso. Essendo stanche del loro viaggio cadono facilmente, anche se sono debolmente colpite o ferite, e rimangono a galla sopra l'acqua dove si colgono agevolmente.

Quelle che scappano a questo macello, si spartono e vanno ad albergare nelle pianure e pascoli, dove altri cacciatori vengono a perseguitarle; ma nondimeno vi sono più difficili a rintracciare e colpire, cosicchè molte scappano a tutti i loro nemici, e nella primavera la maggior parte lascia la Sicilia per ritornare nell'Italia e nel

[p. 134.]

continente: la loro partenza è però più segreta del loro arrivo, i loro persecutori non hanno quindi scampo di disturbarla.

American Monthly Magazine and Critical Review. IV, No. I, Nov., 1818.

In an article entitled "Museum of Natural History," Rafinesque gives an account of various new genera and species of animals, plants, etc., among which appears the following:

[p. 41.]

I. N. G. *Rimamphus*. (A bird. Natural family of *Leptoramphous*.) Bill subulate, mandibles convex, leaving an opening between them, the lower one straight, the upper one longer, curved, and not notched, nostrils naked. *Rimamphus citrinus*. (Citron Open-bill.) General colour of a citron yellow, back rather oliveaceous, five brown and raised feathers on the bend of the wings, quills tipped with brown, bill and feet flesh-coloured. A beautiful little bird, about 5 inches long, the tail, which is truncate, is one inch and an half, the wings are short. It is a native of the south, and was shot near the falls of Ohio, in Indiana, in the month of July. Very scarce. It lives on insects, and darts on them from the trees. It does not sing.

In the next number of this magazine (IV, No. 2, Dec., 1818), there is a continuation of the "Museum of Natural History," with the following paragraph on birds:

[p. 106.]

2. BIRDS. Among them three new genera, *Rimamphus*, *Ramphosteon*, and *Symphemia*, and at least 38 new species have been ascertained. These belong to the following genera: — *Philomela*, 8 species; *Cuculus*, 1; *Troglodytes*, 1; *Sylvia*, 2; *Muscicapa* 2; *Perdix*, 1; *Rallus*, 1; *Talco*, 7; *Mergus*, 3; *Anas*, 5; *Phalaropus*, 1; *Tringa*, 2; *Charadrius*, 2; *Podiceps*, 1; *Himantopus* 1, &c.

Journal de Physique, LXXXVIII, Juin, 1819.

PRODROME

De 70 nouveaux Genres d'Animaux découverts dans l'intérieur des États-Unis d'Amérique, durant l'année 1818;

— Par C. S. RAFINESQUE.

[p. 418.]

II^e CLASSE. OISEAUX.

3. RIMAMPHUS. Bec subulé entr'ouvert, mandibules rondes, la supérieure très-courbée, vibrissées; narines nues, etc. Famille des Leptoramphes ou Fauve tes. 1 espèce du Kentucky. *R. citrinus*. Jaune citron, dos olivâtre, bec et pieds incarnats, ailes courtes, 5 plumes brunes, relevées au fouet de l'aile; insectivore; il ne chante pas et s'élance des arbres sur sa proie.

4. HELMITHEROS. Différent du genre *Sylvia* par bec un peu courbe, mandibule supérieure arrondie non échancrée. Le type de ce genre est la Fauvette vermivore, ou Wormeater Warbler de Wilson, que je nomme *H. migratorius*.

5. SYMPHEMIA. Différent du genre *Tringa* par bec cylindrique, doigts semi-palmés. Type *T. semi-palmata* que je nomme *S. atlantica*. Il y en a une autre espèce en Kentucky qui peut se nommer *S. melanura*.

Annals of Nature or Annual Synopsis of New Genera and species of Animals, Plants, &c. discovered in North America. First Annual Number, for 1820. (Introduction dated March 1, 1820.)

[p. 4.]

II CLASS. ORNITHIA.—THE BIRDS.

13. *Milvus leucomelas*. White, unspotted, top of the head and part of the back, wings, tail and bill black, feet yellow.— It is found in west Kentucky and Illinois, it feeds on fishes, and is therefore called Fishing Hawk; size small, tail quite forked.

14. *Ardea phaioma*. Entirely of a deep brown, neck ferruginous behind, white before, bill black, feet yellow.— It lives in Missouri, Illinois and west Kentucky; it is of a small size, total length about eighteen inches; it belongs to the tribe of Bitterns.

15. *Charadrius viridis*. Entirely of a light green, unspotted, wings and tail tinged with brown, bill and feet black.— It has been seen by Mr. Audubon in Missouri, near St. Genevieve; it is a solitary and very wild bird, size of the common Plover. Is it a *Fulica*?

16. *Hirundo phenicephala*. Head scarlet, back grey, belly white, bill and feet black.— A fine and rare swallow, seen only once by Mr. Audubon, near Hendersonville in Kentucky; it must have been a wanderer, and is probably a native of Louisiana or Mexico.

The descriptions of Nos. 15 and 16 are thought to be those of imaginary birds, furnished by Audubon, who imposed on Rafinesque in several other instances. Audubon's opinion of Rafinesque is duly recorded in one of the sketches in his 'Ornithological Biography' (I, 1832, pp. 455-460).

Annales Générales des Sciences Physiques (Bruxelles), VII, "1820" (1821),

Sur quelques Animaux hybrides. Par M. C. S. Rafinesque. Pp. 85-88.

The only reference to birds in this article is the following:

[p. 88.]

L'oie du Canada ou oie à cravatte (*Anser canadensis*) a été complètement apprivoisée dans les Etats-Unis, où elle existe en parfaite domesticité. Elle s'est unie presque aussitôt avec l'oie domestique, et a produit des individus féconds, lesquels ont produit de nouveaux métis féconds, par le croisement des races; ils participent plus ou moins de la nature des espèces dont ils proviennent, à mesure qu'ils s'éloignent des types originels. Cependant l'oie à cravatte a été regardée comme une espèce distincte par tous les naturalistes, et même par Buffon, quoiqu'il fût si porté à restreindre le nombre des espèces par esprit de système.

La même union féconde a lieu entre le canard domestique et le canard musqué, quoique ce dernier diffère si essentiellement du premier, qu'il devrait peut-être former un genre, ou sous-genre à part, à cause surtout de sa tête caronculée. Ils diffèrent entr'eux certainement autant ou plus que les aras ne diffèrent des perroquets dont ils ont été séparés.

Atlantic Journal, and Friend of Knowledge, I, No. 2, "Summer of 1832"

p. 63.]

10. ORNITHOLOGY.—Description of a new Eagle from South America, *Aquila dicronyx* or Macarran Eagle. By C. S. R.

Mr. Macarran of Philadelphia has had for 5 years in his small menagerie and botanic garden, a beautiful eagle, kept alive in a cage in the open air during the coldest winters, being a native of the cold climate of Antarctic America. He was found by the mate of a vessel near Buenos Ayres, while yet young, feeding on a dead horse, and taken alive without much difficulty. He has grown and improved in colors since bought by Mr. Macarran. Although fierce and wanting to fly against the boys when they annoy him, he is very tame and grateful towards his keeper: he knows him as well as friendly visitors, and greets them by peculiar postures, looks or cries. He has several kinds of cries rather harsh, to express joy or anger. He feeds on every kind of flesh, offals or even fish and dead animals. He will kill rats and eat them. He is a beautiful noble bird, when he expands the wings they fill his large cage. His gait is clumsy and he oftener jumps than walks.

I have called him *Aquila dicronyx* from the singularity of claws of two

colors.

Aq. dicronyx. spec. ch. Bill horny, feet yellow, claws black, but the middle claw horny or whitish; plumage blackish, head greyish, tail whitish, end of it rusty.

Description.—Total length 3 feet, wings expanded, 9 feet; bill large strong 4 inches long, shaped as in the eagles, of a horny or whitish-yellowish color; cere and lore brownish; eyes black and bright, iris yellow; head greyish above and across the eyes, nearly white beneath and above the eyes; feathers nearly black with a lead colored cast, white at their base; wings slate colored beneath; Uropygial feathers mixt of black and grey. Tail with a rusty band at the end. Feet yellow very strong, feathers not quite to the toes. Claws strong and black, that of the middle toe same color as the bill.

When younger this bird was entirely of a bluish black, or dark lead color, the head and tail have since changed, but the rusty band of the tail and claws were permanent and are prominent distinctions between this eagle and the whitehead eagle.

Mr. Audubon admired this eagle and wanted to purchase him; but Mr. Macarran would not take less than \$100 for him.

This appears to complete the list of Rafinesque's ornithological writings. I have not, however, consulted his "Enumeration and Account of some remarkable Natural Objects in the Cabinet of Professor Rafinesque,"¹ published in Philadelphia, in 1831. This work, we learn from an advertisement on the back cover of his 'Life of Travel,' was "sold to Zoologists and Oryctologists, for 25 cts."

¹ Dr. Allen has recently written me that there is no ornithological matter in this work.

A CAROLINA WREN INVASION OF NEW ENGLAND.¹

BY CHARLES W. TOWNSEND, M. D.

PRIOR to the summer of 1908, the Carolina Wren, *Thryothorus ludovicianus*, has been but an accidental visitor in New England north of Rhode Island and Connecticut, and a rare summer visitor in these two southern States. Beginning with the summer of 1908 reports of this bird in the vicinity of Boston and in other parts of New England became so frequent, that it has seemed worth while to collect as many as possible of these reports, in order to determine the extent of what may be called an invasion into the Transition Zone of this Upper Austral bird. The cause or causes of this invasion I shall not attempt to decide, but it is natural to suppose that unfavorable conditions in the South, or favorable conditions in the North, or both combined may have been causative factors; or, on the other hand, that such favorable conditions existed in the South that the birds increased and survived beyond their normal belt with a resulting overflow to unoccupied area. In any event, the abnormally mild winter of 1908-'09 was favorable to the stay of this bird in a region north of its usual winter area. It can hardly be expected that the Carolina Wren will make the extension of its range permanent, for it is probable that in past times before records were kept, the same or similar favorable circumstances for extension have occurred, yet the extension has not been permanent.

Before recording the occurrence of the Carolina Wren in New England during the last year, *i. e.* from May 1, 1908, to May 1, 1909, it may be well to give briefly the previous standing of this bird in the different States.

Maine: two records, one of a breeding pair.² *New Hampshire*: two records.³ Mr. Charles F. Goodhue of Penacook, N. H., writing under date of April 23, 1909, adds a third record for the State. He says: "I have a fine male in my collection taken at Webster, N. H., April 25, 1902, which is, so far as I can learn, the second

¹ Read before the Nuttall Ornithological Club, May 3, 1909.

² G. W. Knight, *The Birds of Maine*, Bangor, 1908, p. 585.

³ G. M. Allen, *A List of the Birds of New Hampshire*, Manchester, N. H., 1903, pp. 172, 173.

specimen ever taken in the State. *Vermont*: "A rare visitant in the southern part of the State."¹ No definite record. Bennington? Cutting." *Massachusetts*²: "A very rare visitant from the South." Some six records and also a pair thought to be breeding are given by Howe and Allen.³ Since the publication of this record and prior to the present invasion, there have been four records of a single bird and one of a breeding pair reported in 'The Auk.' *Rhode Island*: "A very rare summer resident"; one breeding record.⁴ Since the publication of the above, the Carolina Wren appears to have been a fairly regular visitor and to have occasionally bred in southern Rhode Island. *Connecticut*: Dr. Louis B. Bishop, in a letter dated April 15, 1909, kindly wrote me as follows: "I have no records of the occurrence of the Carolina Wren in Connecticut before 1891. . . Mr. W. H. Hoyt of Stamford informed me that two were taken there in the fall of 1891 and it had been frequently noticed since, and that he believed it then occurred regularly. Mr. John Schaler of Stamford gave me much the same information, but he did not find it till 1894. Mr. W. R. Nichols of Branford told me on June 6, 1894, that a pair had bred in Branford for several years, but had not been seen that year, their breeding place having been cut over. Between New Haven and Guilford I found them in the fall of 1902, the two collected being young birds, and noted two in the fall of 1903. From then I have no record of the Carolina Wren in Connecticut until those reported by Mr. Clifford Pangburn in this April 'Auk,' and I believe the cold winters of 1903-4 and 1904-5 exterminated them."

In the following report it is sometimes difficult or impossible to determine whether the same bird has been seen in two nearby localities, or whether two different birds have been observed. In some cases it seems probable that different birds have been found, owing to the relatively stationary habits of the Carolina Wren and its restricted feeding area, while in other cases this point is definitely

¹ G. H. Perkins and C. D. Howe, A Preliminary List of the Birds found in Vermont, New York, 1901, p. 116.

² R. H. Howe, Jr., Review of Perkin's Birds of Vermont, Longwood, Mass., 1902, p. 21.

³ R. H. Howe, Jr., and G. M. Allen, The Birds of Massachusetts, Cambridge, Mass., 1901, p. 92.

⁴ R. H. Howe, Jr., and E. Sturtevant, The Birds of Rhode Island, 1899, p. 84.

settled by the observation of the two birds at the same time in the two areas. Only two of the birds are reported to have been shot, but fortunately the definite character of the shape, markings and action of this bird, as well as its characteristic call notes and song, have made its identification easy and certain. Besides those reporting the Wrens numerous other bird-students have had the opportunity to study these interesting and entertaining birds. One cannot help comparing the reception of these birds to-day, with their probable fate twenty years ago or less, had the invasion occurred then.

MAINE.—A male Carolina Wren was first seen at *Falmouth*, Maine, on August 18, 1908, by Mr. Ernest Brewer. From that date to October 3 it was seen by numerous observers. On October 3 it was shot by Mr. Arthur H. Norton, and the specimen is now in the collection of the Portland Society of Natural History.¹

NEW HAMPSHIRE and VERMONT.—I have been unable to obtain any record for the occurrence of the Carolina Wren in these States during the last year. For this negative report as regards New Hampshire, I am indebted to Dr. Glover M. Allen, Mr. Francis G. Blake, Mr. C. F. Goodhue, and Mrs. W. R. Varick; as regards Vermont, to Prof. G. H. Perkins.

MASSACHUSETTS.—Mr. Ralph Hoffmann tells me that no Carolina Wren has been noted in the *Berkshires* as far as he can learn. Mr. R. O. Morris of *Springfield* writes me under date of April 20, 1909: "There are no records that have come to my knowledge, and I doubt if the invasion extended to this part of the State."

In the eastern part of the State, especially in the vicinity of Boston, records abound. At *Ipswich*, Mr. A. C. Bent and I found a Carolina Wren on February 7, 1909, in a planted spruce thicket near a house close to the sea. I saw the wren again on March 7. It was within a hundred yards of a Cardinal that had been there for a month. Mrs. Lidian E. Bridge saw this wren on February 22 and March 12; on the last named date it was also seen by Mr. H. W. Wright.

In *Middlesex Fells*, a Carolina Wren was seen by Mrs. Bridge on October 3 and 4, 1908, and on March 7, 1909, while one was seen in the same place by Mr. Wright on November 13, and two on November 16, and December 4, 1908.

¹ Journal Maine Ornith. Soc., Vol. XI, 1909, pp. 4-10; also Auk, Vol. XXVI, 1909, p. 82.

At *West Medford*, Mrs. Bridge reported a wren in song observed by Mrs. Ruth Coolidge on August 10, 1908.

At *Concord* one was seen by Mrs. Bridge on October 9, 1908, and Mr. F. B. McKechnie saw one in this town on April 5, 1909. He was told it had been seen in the same locality for two weeks previously.

At *Arlington Heights* Mr. George Nelson saw a Carolina Wren on August 15, 1909, and heard him on August 16.

Cambridge. On September 7, 1909, Mr. Wm. Brewster discovered two Carolina Wrens in his garden, where they remained a week or ten days. They were seen also by Mr. Walter Deane and Mr. H. A. Purdie. In a letter to me from Mr. Brewster dated March 26, 1909, he says of these birds: "I took them to be a pair of fully adult birds. One of them sang rather frequently, especially in the early forenoon. After seeing *them both* in the garden one morning I walked up Sparks Street to a stable on Concord Avenue beyond Huron Avenue and fully a quarter of a mile from our place. On arriving at my destination I heard a Carolina Wren sing several times in a yard next that in which the stable was situated. This bird must have been a different one from the other two. I did not see it."

In *Brookline*, close to Boston, it is apparent that two pairs of Carolina Wrens passed the summer in localities not more than three fourths of a mile apart; both of these pairs came under my observation on several occasions. Of the pair observed at Dudley Street, Miss Blanche Kendall writes me as follows: "I first heard and saw the Carolina Wren on July the twenty-third, and on the twenty-ninth I discovered that there were two. They remained until the afternoon of December thirteenth when they disappeared during that first heavy snow-storm. We enjoyed seeing and hearing them all summer, and they grew very tame by fall, coming to the suet; on to the windowsill, and even inside the room for seeds and nuts." I saw one of these birds on July 30.

At High and Allerton Streets in the same town a pair of Wrens had been seen and heard by the residents since about July 16, 1908. I saw one or both on July 29, August 18, September 3 and 30. After the last of August they spent the nights in the end of a rolled up matting screen suspended from the roof of the piazza of Dr. F.

P. Denny's house on High Street. I inspected these birds at close range on the evening of September 3, by the light of a wax taper. The two were so rolled up in a ball, with feathers puffed out, that it was very difficult to make either head or tail of them. I touched the tips of their feathers without awakening them. Dr. Denny told me the birds left in the latter part of November.

A third pair of Carolina Wrens in Brookline has been reported to me by Mr. Clarence Little. About October 15, 1908, a pair of these birds appeared at his place on Goddard Avenue, about half a mile from the Dudley Street pair. They remained through the winter and up to the date of his writing, May 1, 1909. On this date he writes: "We have seen them with one or two exceptions every day, and they have been seen chiefly in or around an old woodpile. As yet, however, we have seen no carrying of nesting material."

Jamaica Plain. On Bowditch Hill Dr. Harold Bowditch identified a Carolina Wren on August 23, 1908, which had been singing in the vicinity of his house for several weeks. He recorded its presence in the same place during September, and of two birds there after September 25. Also from that date until March, 1909. He says in a letter of April 5, 1909: "The birds were always recorded within an eighth of a mile of our house, on our place or on one of those adjoining it." These birds were both seen by Mr. F. H. Allen on September 3, 1908.

In another part of Jamaica Plain, Mr. James L. Peters found a Wren on September 21, 1908, which "was seen off and on until nearly the first of November." Mr. Peters considers this was probably the same bird that he found on July 17 in Franklin Park, less than three quarters of a mile away. It is possible that the same Wren may have been noted by Mr. Jack who writes under date of April 19, 1909, as follows: "In October at least one Carolina Wren came on several different dates, about my house on Forest Hills Street, Jamaica Plain, always noted and discovered by its peculiar call, its last visit being noted on November 2."

Mr. C. E. Faxon writes me under date of April 13, 1909, that "Two Carolina Wrens appeared here [at the Arnold Arboretum in Jamaica Plain] this summer about August 1, and stayed about three weeks when they were disturbed by some work going on near

their favorite haunts and moved on. The male sang almost constantly." These birds were also reported by Mr. J. G. Jack.

West Roxbury. Mr. J. S. Codman¹ saw a Carolina Wren in West Roxbury on November 8, 1908, and again on November 26. (Jamaica Plain, the Arnold Arboretum, Franklin Park and West Roxbury are all included in the City of Boston.)

Cohasset. Mr. J. G. Jack has given me the record of a Carolina Wren during the latter part of August and all of September, 1908, at Sandy Cove in Cohasset. After this month Mr. Jack did not visit Cohasset until February 22, 1909, when he again found the Wren in the same spot. Mrs. Bridge found the Wren there on March 17. At Scituate, in the thicket of the Glades, Mr. H. W. Wright found a Carolina Wren singing on April 10, 1909. This spot is about a mile across the water from Sandy Cove.

Naushon Island. On July 13, 1908, Mrs. Bridge found a Carolina Wren in full song at this island. On the following day she discovered that there were a pair of Wrens there, and she heard the male sing on the 15th and 16th. She writes me under date of March 2, 1909: "Later in the season my cousin Mr. Ralph Forbes reported to me several Wrens [at Naushon], probably the young." As Mr. Brewster² reported the nesting of a pair of Carolina Wrens at Naushon in 1901, it is possible that they may nest at this southern station not infrequently.

There have been, therefore, at a moderate estimate during the last year about twice as many Carolina Wrens seen in Massachusetts as have been reported in all previous years.

RHODE ISLAND.—Mr. R. G. Hazard reports the breeding of the Carolina Wren in Rhode Island.³ At *Peace Dale* he found more than one pair during the summer of 1908, but records no nests. July 13 is the earliest date he gives. Mr. Leon J. Cole⁴ found during the summer of 1908 "at least two, and possibly more Carolina Wrens resident at *Kingston, R. I.*" Late in July is his earliest date.

Mr. Edward Sturtevant, under dates of April 17 and April 30,

¹ Bird Lore, 1909, Vol. XI, p. 86.

² Auk, Vol. XVIII, 1901, pp. 397, 398.

³ Auk, 1908, Vol. XXV, p. 480.

⁴ Auk, 1909, Vol. XXVI, pp. 81, 82.

writes me that a pair made their home near his house at Newport last summer, and mentions April 19, 1908, as an early date. This year he has had two in the same place since March 24.

CONNECTICUT.—Mr. A. W. Honeywill, Jr., reported in 'Bird Lore Census' ¹ a Carolina Wren seen at *New Haven* on December 25, 1908. Mr. C. H. Pangburn ² found two Wrens in the same locality at New Haven on December 29, and shot one there on January 2, 1909. Dr. Bishop, in his letter above referred to says: "Mr. Dwight B. Pangburn tells me that he or his brother, Clifford, have seen as many as three at one time this past winter in the region mentioned in 'The Auk'; but that none have been seen since March 10."

I wish to thank the numerous observers who have kindly put their records at my disposal, and have made this report possible.

SOME ORIGINAL MANUSCRIPT RELATING TO THE HISTORY OF TOWNSEND'S BUNTING.³

BY RUTHVEN DEANE.

THROUGH the kindness of the late Mrs. Lucy Audubon Williams,⁴ I am enabled to add a more detailed account of the capture of this unique specimen, as furnished to Audubon by Dr. John K. Townsend ⁵ on September 27, 1833. Audubon's first mention of this bird (*Orn. Biog.*, Vol. II, 1834, p. 183, pl. 400; Vol. V, 1839, p. 90) merely states that it was discovered in the vicinity of Philadelphia, and it is not a little strange that he did not give such details

¹ Bird Lore, Vol. XI, 1909, p. 22.

² Auk, Vol. XXVI, 1909, p. 195.

³ *Spiza townsendii* (Aud.), A. O. U. Check-List of North American Birds, second edition, p. 331, 1895. Hypothetical List. "Its peculiarities cannot be accounted for by hybridism, nor probably by individual variation."

⁴ Mrs. Lucy Audubon Williams, born June 30, 1838; died February 21, 1909

⁵ Dr. John Kirk Townsend, born October 10, 1809; died February 6, 1851.

of its capture as was furnished to him by Townsend the previous year, particularly as the bird was new to science.

As Townsend's description, sent to Audubon, is headed "*Emberiza Auduboni* — Audubon's Bunting," he evidently intended to name the species after Audubon, who in turn reversed the compliment, no doubt thinking it should bear the name of its discoverer.

Audubon, in his short account, did not give the date of capture, but we find the following record in Dr. Michener's¹ 'Insectivorous Birds of Chester County, Pennsylvania' (U. S. Agricultural Report, 1863, p. 287): "New Garden, 11th of 5th month, 1833.— This morning my friend John K. Townsend, in company with John Richards, while in quest of birds for my cabinet, shot a bunting² in William Brown's cedar grove, near New Garden meeting-house, which is believed to be a nondescript. We have given it the provisional name of *Euspiza albigula*, or white-throated bunting."

Contrary to the above, Townsend, in his original manuscript, now in my possession, gives the date of capture as *12th of June, 1833*. Townsend, however, may have recorded from memory four months later, while we know that Michener's record was taken from his diary.

Accompanying the Townsend manuscript is a verbatim copy in the hand-writing of Mrs. Audubon. Heading this copy, in Audubon's hand, is written, "read on the other side first." On the back of the sheet he had written, to preface Townsend's description, the following:

"On my reaching Philadelphia³ bent on going to the Floridas once more, I had the pleasure of renewing my acquaintance with John K. Townsend Esq. of that city. His zeal for the study of ornithology was unrelented. I saw this in his fine eye whilst he with enthusiastic glee spoke to me of a new bird lately procured by himself. I saw this bird and accepted it to make the drawing now before you, and as its habits are yet unknown, I merely can give a copy of Mr. Townsend's letter to me on the subject."

¹ Dr. Ezra Michener, born 1794; died 1887.

² This mounted specimen was in Dr. Michener's cabinet for twenty-four years. It was then (1857) deposited with the Smithsonian Institution, but was not catalogued (No. 10,282) until May 21, 1858.

³ On September 14, 1833, Dr. John Bachman wrote an urgent letter to Audubon to again visit him at his home in Charleston, S. C. This invitation was accepted and he was evidently on his way there when passing through Philadelphia.

While Audubon had the specimen in hand to color and describe, he evidently used Townsend's description and measurements, though somewhat rearranged. There can be no doubt but that all this was prepared for publication, but for some reason was never used.

Copy of Townsend's Original Manuscript.

"EMBERIZA AUDUBONI.

"Audubon's Bunting.

"I obtained this bird, (which I have honored with the name of our distinguished countryman) in New Garden, Penn. on the 12th of June 1833. It was first observed sitting listlessly upon a fence rail, but upon being approached flew to the top of an adjacent tree from which it emitted a succession of lively notes somewhat resembling the song of the Indigo Bird (*Fringilla cyanea*) but louder and more varied. Its flight was performed by short quick jerks of the wings and undulations of the body. It was with extreme difficulty that I approached sufficiently near to shoot, it being very shy and watchful and passing rapidly from tree to tree. Anxiety to procure it prevented my observing its habits more particularly. I have since visited the spot repeatedly but have never seen another individual.

"Male — Upper mandible black, middle edge white, lower light blue with a longitudinal line of black extending from the point half way to the base; irides light hazel; head dark plumbious, indistinctly spotted with black; cheeks and breast light plumbious; line over the eye white; throat white, with a black line extending from the base of the lower mandible down each side of the neck and terminating on the breast in a few small oval spots; outside the black line on each side of the throat is a broader stripe of white ending with the base of the auriculars; back varied with black and brown; wings plain dusky, the first and second primaries equal and longest, the lesser coverts edged with pale brown; shoulders yellowish white; rump and emarginate tail uniform with the wings; breast tinged with ochreous, the color gradually deepening upon the belly; below and inferior tail coverts brownish-white; legs and feet dusky. Length $5\frac{3}{4}$ inches. Extent 9 inches.

"I was at first inclined to consider this species as identical with the Black-throated Bunting (*Fringilla americana*) setting aside the very considerable dissimilarity which I observed in its habits, voice &c. More particular observations however, and a careful comparison of the individual with descriptions and specimens has convinced me beyond the shadow of a doubt that my bird is new, and in this belief I am sustained by Mr. Audubon than whom there cannot be better authority.

"There is a species described by Vieillot under the name of *Fringilla*

grisea and said to inhabit the U. States which somewhat resembles the present in its markings, but upon comparison they will be found specifically distinct.

"John K. Townsend, Philad.
Sept. 27th, 1833."

[Superscribed]

"John James Audubon Esq."

ANNOTATED LIST OF THE WATER BIRDS OF WELD,
MORGAN AND ADAMS COUNTIES, COLORADO,
SOUTH TO THE FIRST SECTIONAL LINE BE-
LOW THE FORTIETH PARALLEL.

BY A. H. FELGER.

With Three Maps.

EASTERN Colorado has come to rank prominently as a section of our country where water birds, waders, and shore birds may, in suitable localities, be found in abundance. This is attributable in the main to two complementary causes, (1) the close settling of the Mississippi Valley with the attendant drainage of the sloughs and marshes of that region, (2) the construction on the eastern slope of Colorado of great numbers of reservoirs, or artificial lakes, for the purpose of storing water for irrigation. From these reservoirs there extend in all directions through the surrounding farm lands net-works of irrigating ditches, producing luxuriant growths of alfalfa, grains, weeds, and wild grasses, which in turn afford most excellent feeding and breeding grounds for many species. About a great many of the reservoirs, too, has grown dense vegetation consisting of deep borders of sedges, cattails, and rushes, which furnish much desired protection both in and out of breeding season.

This section is, moreover, cut by numerous streams, which collect the melting snow from the eastern mountain slopes and start it on its journey to the Gulf of Mexico. Many of the smaller of these streams, it is true, are dry during the summer, but in the spring, when the northern flight of birds is at its height, their banks in many

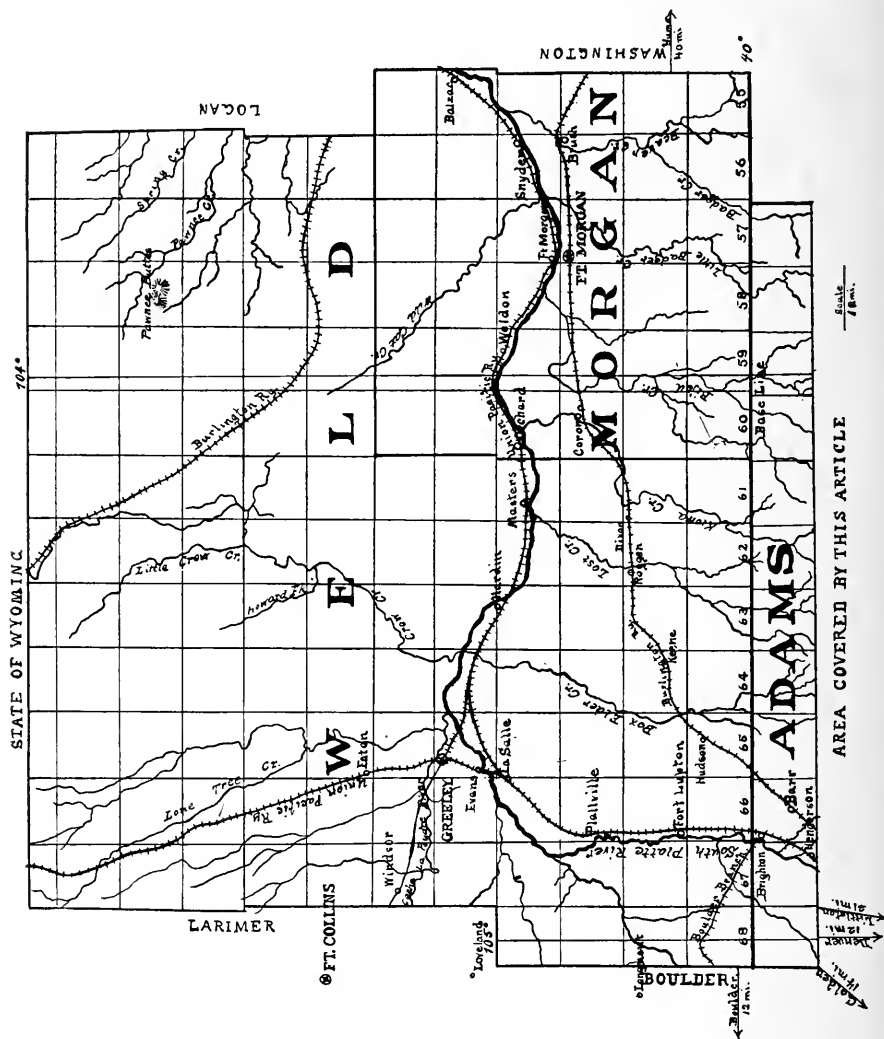
instances are overflowed, causing great areas to be flooded, and furnishing thereby most desirable localities in which water-loving species may pause awhile in their journey. On the other hand, a goodly number of the larger streams, like the Arkansas, South Platte, etc., carry water the year around, and receiving the drainage from the cities along their courses, bear upon their surfaces the cannery and factory waste products, many of which are eagerly sought out by these birds for food.

The area covered by this article occupies a portion of the Eastern Slope very highly adapted to water-frequenting birds; it contains many artificial lakes of large size, is intersected by many irrigating ditches, contains numerous fields of alfalfa and the various grains, and receives via the Platte River all the refuse products of the factories and canneries of Denver. Its elevation varies from 4000 feet to 7000 feet. The hunting and fishing privileges of nearly all the lakes and reservoirs within it are held by gun clubs under leases covering hunting and fishing only. With many of these clubs shooting on the lakes is permitted only during certain days of each week of the hunting season. Whether shooting is permitted on other days of the week, or not, nearly all the clubs are uniform in allowing it on Saturdays and Sundays. As a result, on Saturday afternoons, from the towns within or near the area there is a perfect exodus of hunters to the lakes in their outlying districts.

Within this area, 18 miles northeast of Denver on the main line of the Chicago, Burlington, and Quincy Railroad, lies the little village of Barr. Beginning perhaps a quarter of a mile southwest of Barr there extends in a northeasterly direction, mostly on the east side of the above named railway, a chain of artificial lakes constructed for the storage of water for purposes of irrigation. The largest of these, and in fact the feeders of the entire chain, are two lakes known as Barr Lake and Upper Barr Lake, and it is on account of the prominence of these two lakes that I shall speak of this chain as the Barr Lake Chain.

The contents of this article are based in large part upon a systematic study in the field of the birds of the Barr Lake Chain covering, with a few interruptions, the period from 1898 to 1909, exclusive of the year 1906. During these eleven years I have made many trips between this field and Denver, on numerous occasions making

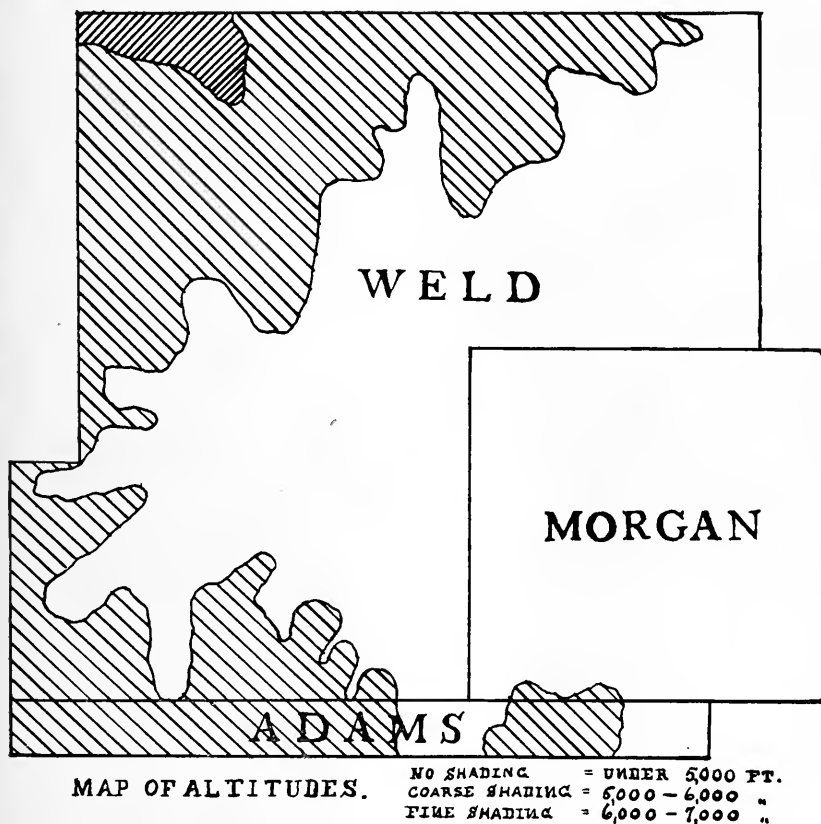
the journey, a distance measured by cyclometer of twenty-five miles by road, on a bicycle, leaving Denver at a very early morning hour



and returning at a very late evening hour. Upon many other occasions the trip has been made by train with a stay of several succes-

sive days on each trip; and upon one occasion the writer rented a house at Barr and took his family there, to be constantly in the field.

Aside from this field work along the Barr Lake Chain, I have, during the past twelve years, including the year 1906, taken many



trips down the Platte River and to other lakes within this area, collecting and taking notes for the list which is now submitted.

In order to give to my readers, especially to those students of ornithology living in proximity to this chain, an idea of the outlines and sizes of these lakes, together with the character of their borders.

I present herewith a detailed map containing measurements personally made. These measurements represent in each case the size of the body of water at the average high water line. They are not assumed to be absolutely accurate, but sufficiently accurate for all ornithological purposes. In taking these measurements I first of all established base lines, then with the aid of a compass I projected upon these base lines the points marking the extreme limits of the lengths and breadths of the several lakes, and stepped off the distances between these projected points. The extreme points of the lakes having thus been established, I sketched in their outlines as best I could from observation while on the ground.

I have included in these notes the earliest and latest dates known to me, of the occurrence of the various species within or adjacent to this area. It is not to be presumed that these dates represent in all cases the extreme periods in which specimens may be found; they are given to serve as a basis for future observations.

Realizing the value to the ornithological student in his field work in any given area of being familiar with the records of species not yet discovered in said area, but noted in adjoining areas, I have deemed it advisable to introduce herein an hypothetical list with notes appertaining thereto.

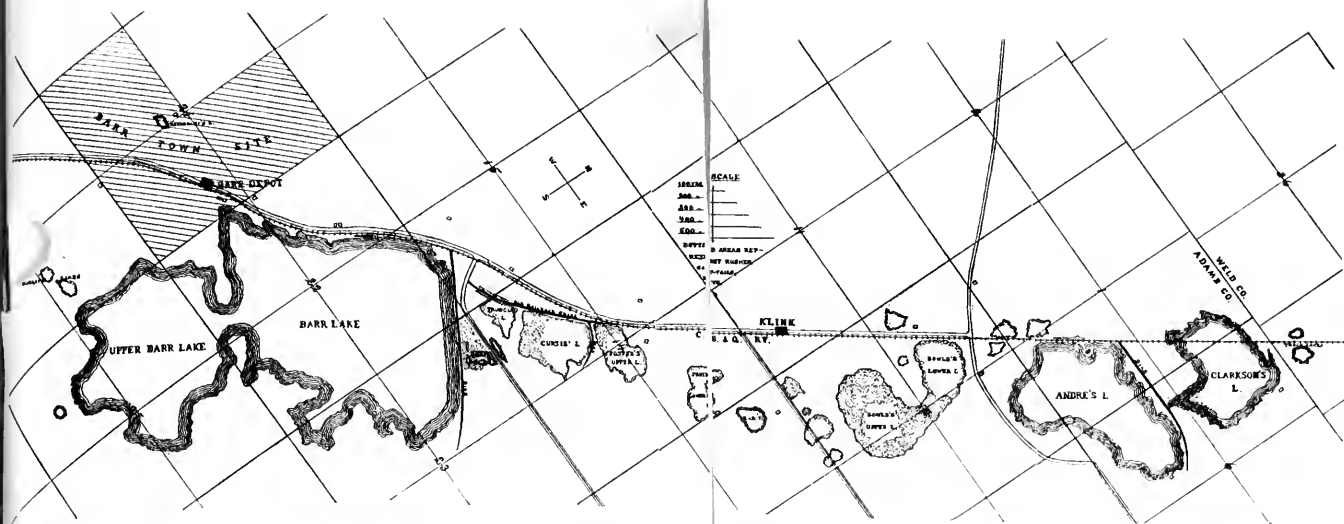
I have aimed to give proper credit where due by adding the name of the informant wherever a record not my own is used, and I desire in this connection to express my gratitude to those whose names are herein mentioned, for helpful notes.

[1. *Æchmophorus occidentalis*. WESTERN GREBE.—Straggler, rare in adjoining and near-by areas. (Oct. 25-Nov. 9.) A western species found only six times to date east of the range in Colorado: at Sloane's, Marston's, and Tynon's lakes near Denver, reported by H. G. Smith (Nid., III, 1896, p. 48.); at Sheldon's Lake, near Fort Collins, reported by W. W. Cooke (Birds of Colo., p. 191); at Citizen's Lake, near Denver, reported by A. H. Felger (Auk, XXVI, 1909, p. 86). From these near-by records it seems probable that this species will yet be found in the area covered by this article.]

[3. *Colymbus auritus*. HORNED GREBE.—Migrant, very rare in near-by area. (Oct. 8, only date known.) Only three apparently unquestionable records to date for the eastern slope of the State, one at Fort Lyon, the other two at Golden. (Birds of Colo., pp. 49, 155.) All these birds were observed at points south of this area, and since it is a northern species coming south in the winter, it should be found here.]







SKETCH MAP OF THE BARR LAKE CHAIN.

4. **Colymbus nigricollis californicus.** AMERICAN EARED GREBE.— Summer resident; very common locally. (April-Oct. 22.) Breeds in considerable numbers all along the Barr Lake Chain. Begins laying in latter part of April or first part of May. The writer has found by May 19 sets of as many as eight and nine eggs advanced in incubation. In all of the sets incubation had at least begun, but in the majority it was from one fourth to three fourths complete.

6. **Podilymbus podiceps.** PIED-BILLED GREBE.— Summer resident; very common locally. This species is usually found associated with the former, and in many cases in almost equal, if not equal, numbers. The remarks made in regard to the former species will apply equally to this species.

7. **Gavia immer.** LOON.— Migrant; rather rare. (March ?, April 15-May 7; Sept. 18-about Dec. 1.) Seen oftener in fall than in spring, usually in ones or twos, but the writer has one record of five in a flock. George C. Welch shot one on the Barr Lake Chain, and the writer has two that were shot by B. T. Ames in the same locality. Of the nineteen records that the writer has for this area and adjoining and near-by areas, fourteen are noted for the fall.

[8. **Gavia adamsi.** YELLOW-BILLED LOON.— Migrant; very rare in adjoining area. (May 25, only date.) One specimen, the only record for Colorado, was taken by W. G. Smith, May 25, 1885, near Loveland. (Birds of Colo., p. 155.)]

[37. **Stercorarius parasiticus.** PARASITIC JAEGER.— Migrant; very rare in adjoining localities. (Fall to early winter.) There was one in the Maxwell collection, taken at Boulder in December of some year prior to 1874; reported by Cooke. (Birds of Colo., p. 50.) H. G. Smith reports one at Sloan's Lake in the fall of 1889. (Nid., III, 1896, p. 48.)]

[40. **Rissa tridactyla.** KITTIWAKE.— Migrant; very rare in adjoining and near-by areas. (December, only month recorded.) One, the only specimen for Colorado reported to date, was in the Maxwell collection and was taken at Boulder in December; reported by Cooke. (Birds of Colo., p. 50.) Rudolph Borchardt, a Denver taxidermist, stated to me on Feb. 3, 1906, that he had received one or two of this species to mount during his residence in this city.]

[49. **Larus occidentalis.** WESTERN GULL.— Straggler from the West; very rare in adjoining area. (September, only month reported.) One taken by Prof. Wm. Osburn, at Loveland, Sept. 30, 1889; reported by Cooke. (Birds of Colo., p. 50.)]

51. **Larus argentatus.** HERRING GULL.— Migrant; rather uncommon. (March-December.) As a rule associated in small numbers with Ring-billed Gulls, but sometimes in small flocks by themselves. Eight birds is the most that I have ever seen together here. One may expect to see an occasional specimen at any time when the Ring-bills may also be found.

[53. **Larus californicus.** CALIFORNIA GULL.— Straggler from the West; very rare in adjoining area. (May, only month reported.) One taken by Prof. Wm. Osburn, at Loveland, May 7, 1890. (Birds of Colo., p. 51.)]

54. *Larus delawarensis*. RING-BILLED GULL.—Common in migration and in summer, but not known to breed. (About March 10-about November 15.) Flocks of from five to seventy-five may be noted in mid-summer at almost any time along the Barr Lake Chain.

[58. *Larus atricilla*. LAUGHING GULL.—Migrant; very rare in near-by district. (December, only month recorded.) Colorado's only record is that of a specimen taken at Sloan's Lake, Denver, in December, 1889, and reported by H. G. Smith. (Nid., III, 1896, p. 48.)]

[59. *Larus franklini*. FRANKLIN'S GULL.—Migrant; rare in adjacent and near-by localities. (May 8; about November 12.) One taken by W. G. Smith, at Loveland, and one reported by A. W. Anthony as having come from near Denver; both recorded by Cooke. (Birds of Colo., p. 51.) Hugo Todenwarth, a Denver taxidermist, reports that on November 13, 1902, he received from W. H. Englesole one of this species in the flesh to mount. Miss Jennie M. Patten reports to Judge Junius Henderson that she saw a Franklin's Gull May 8, 1905, near Yuma.]

[60. *Larus philadelphia*. BONAPARTE'S GULL.—Migrant; rare in adjoining and near-by areas. (Fall, and apparently spring also.) Cooke reports that this species has been taken near Fort Collins, and that it is said to be not uncommon locally, adding that nearly all were taken in the fall. (Birds of Colo., pp. 51, 193.)]

[62. *Xema sabinii*. SABINE'S GULL.—Migrant; rare in near-by and adjoining districts. (October 1-December.) Cooke mentions five specimens from Denver, Boulder, Loveland, and Fort Collins, all noted from October to December. He also states that E. L. Berthoud says that these gulls were not uncommon in early days, but have disappeared in late years. (Birds of Colo., pp. 51, 155.) Two of the above are records of H. G. Smith's, one for October 1, and the other bearing no date. (Nid., III, 1896, p. 48.) I have in my collection a young bird presented to me by Hugo Todenwarth. It was shot November 17, 1902, supposedly near Denver; collector unknown to the writer.]

69. *Sterna forsteri*. FORSTER'S TERN.—Summer resident. (April-October 7.) In summer, common locally; more common in migration. Quite a number breed regularly along the Barr Lake Chain upon the lake shores and upon masses of dead, floating cattails and rushes. Have noted flocks of one hundred, or more, in May, and flocks of from thirty to forty through June and July. Have taken sets of eggs on May 19, in none of which was incubation begun.

[71. *Sterna paradisæa*. ARCTIC TERN.—Migrant. (Spring-July 9) Very rare in adjacent and near-by localities. Cooke states that Wm. Osburn has an adult male taken at Loveland July 9, 1889 (Birds of Colo., p. 51.) H. G. Smith states that one was shot near Denver in the spring of 1887. (Nid., III, 1886, p. 48.) There are no other Colorado records.]

77. *Hydrochelidon nigra surinamensis*. BLACK TERN.—Summer resident. (April-October.) Common locally both in summer and in migration. Breeds along the Barr Lake Chain in localities similar to those of Forster's

Terns. Have seen flocks of as high as one hundred twenty-five in May and flocks of from twenty to sixty in June and July.

120. *Phalacrocorax auritus*. DOUBLE-CRESTED CORMORANT.—Migrant. (March 20-?; about October 1-November 23.) Rare in adjacent and near-by localities. H. G. Smith records a flock of about twenty from Sloan's Lake, one specimen from Marston's Lake, and one from Jones's Lake, all near Denver. He also records one from "about twenty miles from Denver." (Auk, III, 1886, p. 284, and Nid., III, 1896, p. 48.) I have records of one at Bowles's Lake, near Littleton; a flock of four at Rocky Mountain Lake, in Denver; and one shot by H. W. Theden, of Denver, on November 23, 1903, locality unknown. I have no records for this area, but it doubtless has been present in this region.]

121. *Phalacrocorax vigua mexicanus*. MEXICAN CORMORANT.—Migrant. (Only date, October 15.) Very rare. The only specimen taken in Colorado is one recorded by the writer as being in his collection, it having been taken at Smith's Lake, October 15, 1899. (Auk, XVIII, 1901, p. 189.) This lake lies across the Platte River west of Henderson, Adams County, and is, as far as the writer can determine from information at hand, on the boundary line of this area.

125. *Pelecanus erythrorhynchos*. AMERICAN WHITE PELICAN.—Migrant or summer resident. (About April 15-November 22.) Not common in migration; in summer, rare. Not known to breed, but I place it as a possible summer resident from the following note: Mr. Durward Luper, of Evans, Weld County, informs me that during July, 1906, there was a small flock on a reservoir of 200-300 acres, which lies 3-4 miles from Evans. This flock remained there for some time; just how long, or whether before or after July, I do not know. Nearly every season a flock, sometimes large, sometimes small, frequents the Barr Lake Chain. In the spring of 1903 there was a flock of about twenty on Andre's Lake, one of the Barr Lake Chain, and on May 13, 1905, I counted forty-one on Barr Lake.

129. *Mergus americanus*. AMERICAN MERGANSER.—Winter resident. (Nov. 1-March 16.) Not uncommon in winter, more common in migration. Quite a number remain during the winter along the South Platte River, especially in localities down the river from Hardin, where there are sand bars in mid-river. I have found, as Mr. Cook remarks, that the river about Fort Morgan is a favorite place for them. A few frequent, during the winter, lakes in which there is some open water.

130. *Mergus serrator*. RED-BREASTED MERGANSER.—Winter resident. (About same dates as previous species.) In migration, not uncommon; in winter, uncommon. This species is never so common as the former species. It may be found in about the same localities.

131. *Lophodytes cucullatus*. HOODED MERGANSER.—Winter resident. (Oct.-April 1). In migration, common; in winter, not uncommon. A few remain through the winter in same localities as American Merganser. One should see from one to a dozen on almost any day in winter and early spring along the Platte River between Hardin and Fort Morgan.

132. **Anas platyrhynchos.** MALLARD.—Resident. In summer, common; in migration, abundant; in winter common locally. A common breeder along the Barr Lake Chain. A goodly number of this species remain all winter about the lakes with some open water and along the South Platte River. Common on Barr Lake and Upper Barr Lake in winter.

134a. **Anas fulvigula maculosa.** MOTTLED DUCK.—Migrant; rare. (March 15-?; Oct. 10-about Dec. 10.) Cooke refers to but three specimens; one of which was taken by Wm. Osburn near Loveland, and the other was reported by H. G. Smith as presumably coming from Colorado. Aside from these, one was killed in the fall of 1895 by Vic. Kennicott at Kennicott Club Lake, $3\frac{1}{2}$ miles east of Longmont, and I have one killed just prior to Nov. 13, 1904, near Loveland. C. A. Kendrick says that they are rare about the lakes on which he shoots near LaSalle, Weld County, but that one is occasionally taken there.

135. **Chaulelasmus streperus.** GADWALL.—Resident. In summer, common; in winter, not uncommon; in migration, abundant. Common breeder along the Barr Lake Chain.

137. **Mareca americana.** BALDPATE.—Resident. In summer, not common; in winter, not uncommon; in migration, abundant. Only a few pairs breed along the Barr Lake Chain.

139. **Nettion carolinensis.** GREEN-WINGED TEAL.—Resident. In summer, not uncommon; in winter, not uncommon; in migration, abundant. Breeds along the Barr Lake Chain, but not in such large numbers as the two following species.

140. **Querquedula discors.** BLUE-WINGED TEAL.—Summer resident. (April 5-Dec. 1.) In summer, common; in migration, abundant. Mr. Durward Luper and Mr. L. B. Meek each shot a Blue-winged Teal on Upper Barr Lake on Dec. 1, 1905. Occasionally a Blue-winged Teal is found straggling along with a flock of Green-wings in its migratory flights, sometimes as early as February and as late as December, but I know of none that has remained during the winter. Have found by June 21 eggs that were nearly ready to hatch and fresh eggs on June 26.

141. **Querquedula cyanoptera.** CINNAMON TEAL.—Summer resident. (March 26-Nov. 1 to 15.) In summer, not uncommon locally, but not as common as the former species; in migration, not uncommon locally. While this species is regularly taken along the Barr Lake Chain, at some of the other lakes in this area it seems to be rare. C. A. Kendrick stated to me during the fall of 1908 that he had not seen one on the club lakes at La Salle for four years. At that place between Nov. 1 and Nov. 15, 1903, he shot two of this species during a hard snow storm and while standing in one foot of snow. La Salle lies only 3 miles east of a north and south line through Barr, so it seems strange that this species should not occur at the former place more frequently, even though it is a western species finding its extreme limit in eastern Colorado. Have found fresh eggs June 13 and eggs advanced in incubation July 27.

142. *Spatula clypeata*. SHOVELLER.— Resident. In summer, common; in winter, uncommon; in migration, abundant. A common breeder along the Barr Lake Chain. Have found eggs advanced in incubation by June 24.

143. *Dafla acuta*. PINTAIL.— Summer resident. (First week in February-middle of November.) In summer, uncommon; in migration, abundant. A few pairs breed regularly along the Barr Lake Chain.

144. *Aix sponsa*. WOOD DUCK.— Migrant; very rare. (?-about May 1; Oct. or Nov.) C. A. Kendrick shot one at La Salle in October or November, 1905. Judge Junius Henderson of Boulder records this species for Boulder County. (Univ. of Colo. Studies, V, 3, p. 234.) The specimens upon which that record is based were two males and one female taken by Messrs. James Cowie and Bert B. Werley, 5½ miles northeast of Boulder at Twin Lake, in the end of October, 1904, and the three were in one flock when taken. I am informed that Mr. P. J. Werley shot another male at the same lake three or four years prior to the taking of these three. Mr. Cooke reports it as having been taken "at Loveland and occasionally on the lakes near Denver." He also states that Mr. E. J. Osler has one, "that was taken at Littleton about May 1, 1892." (Birds of Colo., pp. 55, 156.) I have notes on several others taken in or near this area but the data thus far received on them are too insufficient to mention here. From these known dates, it seems that it is present in or near this area only during spring and fall migration.

146. *Marila americana*. REDHEAD.— Resident. In summer, common; in winter, rather uncommon; in migration, abundant. Have taken it at Barr in mid-winter. Breeds along the Barr Lake Chain in goodly numbers, more abundantly than the following species.

147. *Marila vallisneria*. CANVAS-BACK.— Resident. In summer, not uncommon; in winter, rather uncommon; in migration, common. A few pairs breed regularly along the Barr Lake Chain. Have found fresh eggs June 20.

148. *Marila marila*. SCAUP DUCK.— Migrant; rare (March 26-April 5). Only two specimens have, to my knowledge, been taken in this area, both by Mr. Bryan Haywood at Calkin's Lake, east of Longmont, and just within Weld County. One was taken March 26, 1904, and is now in the State Historical Society collection; the other was taken April 5, 1902, and is in the writer's collection. There seems to have been none recorded from the surrounding territory.

149. *Marila affinis*. LESSER SCAUP DUCK.— Resident. In summer, not uncommon; in winter, rather uncommon; in migration, abundant. A few pairs breed along the Barr Lake Chain.

150. *Marila collaris*. RING-NECKED DUCK.— Migrant; rare. (March 29-about April 25.) There are but few records for the entire State on this species and in the territory near-by this area I know of but two specimens having been taken. For this area itself, I have only one record, a male in my collection, killed by Bryan Haywood at Calkin's Lake, Mar. 29, 1903.

151. *Clangula clangula americana*. AMERICAN GOLDEN-EYE.— Resident. In summer, not common; in winter, common; in migration more common. A dozen or more of this species have been known to remain all summer along the Barr Lake Chain, and for this reason I have called it a resident, although I have never actually found its nest. There are no hollow trees or stumps along this chain of lakes for them to nest in. I have found other ducks' nests in excavations that the ducks themselves had made in musk-rat houses. Following its natural inclinations for hollowed-out nesting sites, this duck may do the same.

152. *Clangula islandica*. BARROW'S GOLDEN-EYE.— Winter resident. (Nov. 18-?.) In migration, not common; in winter, not uncommon. Not known to breed.

153. *Charitonetta albeola*. BUFFLE-HEAD.— Winter resident. (Oct. 24-April 25.) In migration, common; in winter, not uncommon.

154. *Harelda hyemalis*. OLD-SQUAW.— Winter resident. (Oct. 16-about March 1.) In migration and winter, rare. Cooke mentions but six specimens for Colorado, all taken in or near this area. They are: one found dead by G. F. Breninger on the shore of a lake near Fort Collins; two shot by J. B. Sibley on McKay Lake, near Denver, Nov. 13, 1892; two shot by Bryan Haywood at Calkin's Lake, near Longmont, and in Weld County, Oct. 16, 1898; and another shot by Mr. Haywood at the same place on Oct. 23. (Birds of Colo., pp. 57, 195.) H. G. Smith records one other, shot by Judge Park at Longmont, about Nov. 20, 1903. (Auk, XXV, 1908, p. 185). I have a number of other specimens to here record: One, received in the flesh to mount by J. C. Miles, a Denver taxidermist, on Nov. 12, 1903, was shot by D. I. Simmons, about 10 miles down the Platte River from Denver; another was shot by Adolph Siebolt, who gave me the note, during the first or second week in November, 1904, at Lock's Lake, one of the Barr Lake Chain; another received in the flesh by J. C. Miles, Dec. 30, 1904, was shot by Mart Watrus at Kennicott Club Lake, 3½ miles east of Longmont; another received in the flesh to mount by Hugo Todenwarth, on Dec. 4, 1905, was shot by Paul Ireland, presumably near Denver; another was shot by Mart Watrus, my informant, at Kennicott Club Lake in the latter part of February or first part of March, 1906. It thus appears that seven out of the total of twelve specimens reported for Colorado were taken within this area.

[160. *Somateria dresseri*. AMERICAN EIDER.— Migrant; very rare in adjoining locality. Cooke records one taken by W. G. Smith at Loveland some time previous to 1892. (Birds of Colo., p. 156.) He also states that "there is a mounted bird of this species at the rooms of the Society of Natural History in Denver....presumably taken in Colorado nearly twenty years ago." The bird herein referred to does not appear to be a *dresseri*; in fact, Mr. Rudolph Borchardt, who mounted it, and from whom the Natural History Society purchased it, informed me that he imported this skin, along with a lot of other skins, from Germany.]

[163. *Oidemia americana*. AMERICAN SCOTER.— Migrant; rare in

adjoining localities. (About Oct. 2-?.) Cooke records only two for Colorado, one in Mrs. Maxwell's collection, taken presumably near Boulder, and one found dead near Fort Collins by G. F. Breninger. (Birds of Colo., p. 57.) Mr. Adam Balmer informed me that one was taken at Aurora Lake, Aurora, a suburb of Denver, about October 2, 1901.]

165. *Oidemia deglandi*. WHITE-WINGED SCOTER.—Migrant; rare. (Oct. 11-Nov. 3.) Cooke records four specimens for Colorado; three reported by G. F. Breninger, one of which was taken Nov. 3, 1890; and one reported by Mr. Fenton as having been taken at Barr Lake, Nov. 2, 1898. (Birds of Colo., pp. 57, 195.) H. G. Smith records five specimens, as follows: one at Marston's Lake, near Littleton, October, 1887; One at Lee's Lake, near Fort Collins, Oct. 23, 1888; one in the collection of W. G. Smith, Loveland; one at Sloan's Lake, near Denver; and one taken at La Salle, Oct. 24, 1904. (Nid., III, 1896, p. 48, and Auk, XXV, 1908, p. 184.) Dr. W. H. Bergtold records one taken at Loveland, Oct. 11, 1903. (Auk, XXI, 1904, p. 78.) I have in my collection another of this species that was killed by Bryan Haywood at Calkin's Lake, near Longmont, and in Weld County, Oct. 20, 1901.

166. *Oidemia perspicillata*. SURF SCOTER.—Migrant; rare. (October-?.) Cooke records five specimens for Colorado; one in the collection of W. G. Smith, taken at Loveland; one reported by H. G. Smith, taken at Marston's Lake, near Denver, in October, 1887; two killed by H. A. Flynn at Loveland, Oct. 31, 1899; and one killed at Barr Lake by L. B. Meek, Oct. 22, 1889. (Birds of Colo., pp. 57, 196.)

167. *Erismatura jamaicensis*. RUDDY DUCK.—Summer resident. (March 24-?.) In summer, common; in migration, more common. A common and regular breeder along the Barr Lake Chain.

169. *Chen hyperborea*. LESSER SNOW GOOSE.—Winter resident. (Oct. 20-March 14.) Not common in migration or winter. A mounted specimen in the Colorado Museum of Natural History, at City Park, Denver, was shot by J. T. Mason at Barr. Miss Jennie Patten reports to Judge Henderson that on Mar. 14, 1905, she saw a flock of thirty at Yuma.

169a. *Chen hyperborea nivalis*. GREATER SNOW GOOSE.—Migrant; rare. (?-April 9.) Cooke records but two specimens for Colorado; one taken within this area east of Greeley by Pres. Z. X. Snyder, on Mar. 20, 1895; the other taken by John F. Campion at Boyd's Lake near Loveland, on April 9, 1899.

170. *Chen rossi*. ROSS'S SNOW GOOSE.—Winter resident; very rare. (Dec. 23, only date.) The only record for Colorado was a specimen reported by the writer as having been shot by Capt. Eli, U. S. A., and presented by him to Mart H. Watrus who in turn presented it to the Colorado Museum of Natural History. It was taken on Dec. 23, 1906, at Kennicott Club Lake, 3½ miles east of Longmont, and was at the time associating with a flock of Mallards. (Auk, XXIV, 1907, p. 211.)

171a. *Anser albifrons gambeli*. AMERICAN WHITE-FRONTED GOOSE.—Migrant; rare. (March 24 only date known.) There is but one record

for this area known to the writer, a specimen observed by him on March 24, 1903, on the South Platte River a few miles above Masters, Weld County. On the following day Mr. Adam Balmer, in company with the writer, shot this same lone bird, and the identity was thereby rendered positive.

172. ***Branta canadensis***. CANADA GOOSE.—Winter resident. (Oct.-April.) In migration, common; in winter, common locally. Scattered flocks may be found during the winter about the large lakes and along the Platte River. Beyond this area down the Platte they are at times abundant, and it is to that section that the hunters of Denver so frequently go in special quest of geese. Cooke records this species as breeding in 1897 at an altitude of 5500 feet, 5 miles west of Ni Wot, Boulder County, which point is 7-8 miles west of this area. It seems probable from this record that the species will some day be found as a breeder in this area.

172a. ***Branta canadensis hutchinsi***. HUTCHIN'S GOOSE.—Migrant; not uncommon. (?-April 10.) It seems as if this bird should be found to be also a winter resident, but I have, to date, no record for this season.

[172c. ***Branta canadensis minima***. CACKLING GOOSE.—Migrant; very rare in adjoining area. (?-April 10.) Cooke records but one specimen for Colorado, a bird which was shot by Mr. John F. Campion at Loveland, April 10, 1898, and is now in the collection of the State Historical and Natural History Society. (Birds of Colo., p. 196.)

180. ***Olor columbianus***. WHISTLING SWAN.—Migrant; not common. (About Feb. 5-March 16; latter part of October-?) Mr. Chas. Johnson informs me that Luke Wallick shot a swan at Barr in the spring of 1907. J. C. Miles informs me that he mounted it. C. A. Kendrick shot one at La Salle in the latter part of October, 1906. These were both presumed to be the Whistling Swan, but the writer saw neither of them. These swans are never common, yet it is expected that each season a few will be seen and one or more taken in or near this area.

181. ***Olor buccinator***. TRUMPETER SWAN.—Migrant; rare. (Spring; fall.) Cooke reports one that was shot adjacent to this area, near Fort Collins, in the fall of 1896. (Birds of Colo., p. 59.) There is a mounted specimen in the Colorado Museum of Natural History that was killed at Eaton, Weld County.

184. ***Guara alba***. WHITE IBIS.—Migrant; very rare. The only Colorado record is reported from this area by H. G. Smith, who states that one was shot at Barr Lake in 1890. (Nid., III, 1896, p. 65.)

187. ***Plegadis guarauna***. WHITE-FACED GLOSSY IBIS.—Migrant; rare. (Latter part of March-?; ?-Oct. 3.) H. G. Smith mentions three from Marston's Lake, near Denver. (Nid., III, 1896, p. 65.) Cooke speaks of one in the Maxwell collection at Boulder, and another in W. G. Smith's collection at Loveland. He also states that two specimens were shot at Barr Lake, Oct. 3, 1898. (Birds of Colo., pp. 60, 177.) Two more records may be added: Hugo Todenwarth received to mount a specimen that was shot near Denver in the spring of 1904, the same being examined by the writer; Adolph Siebolt says that in the latter part of March, 1903,

he shot one during a hard snow-storm on Lock's Lake, one of the Barr Lake Chain.

[188. **Mycteria americana.** WOOD IBIS.—Migrant; rare in near-by areas. (?-Aug. 30.) A southern species wandering into Colorado occasionally in summer. Cooke speaks of one in the Maxwell collection at Boulder. (Birds of Colo., p. 60.) The writer recorded two more specimens that were shot by L. L. Llewellyn, Aug. 30, 1902, at a small lake about 12 miles southwest of Denver. (Auk, XX, 1903, p. 65.) Mr. George Suess informs me that in about 1896 or 1897 he saw a flock of perhaps a dozen birds, which appear to have been of this species, at Patrick's Lake, near Littleton.]

190. **Botaurus lentiginosus.** AMERICAN BITTERN.—Summer resident; or resident. In summer, common; in December, rare; in migration, common. I speak of it as a possible resident on the strength of one record, a specimen seen by myself Dec. 28, 1904, at one of the warm springs on the Platte River near Fort Morgan. It appeared to be perfectly sound, being a strong flyer. I have eggs collected June 21, that were but slightly incubated.

[191. **Ixobrychus exilis.** LEAST BITTERN.—Migrant, or summer resident; very rare in near-by localities. (June 8, only known date.) Cooke records but six specimens for Colorado and two of these are from Denver and vicinity, the one being reported by H. G. Smith, and the other having been killed by Rudolph Borchardt, at Berkeley Lake, June 8, 1898. (Birds of Colo., pp. 157, 197.)]

194. **Ardea herodias.** GREAT BLUE HERON.—Summer resident. (March 20-about Sept. 24.) In migration, abundant; in summer, abundant, locally. Abundant in summer along the Barr Lake Chain, to which many are accustomed to fly in from the Platte River in the early morning to feed upon fishes, etc., flying back again to roost presumably in the river timber at night. They appear here in flocks containing as high as two hundred birds. So far as known, they breed in this area only in trees. A number of their heronries have been found within this area, among them being one on the Cache la Poudre River near Windsor, Weld County; one on Crow Creek, northeast of Greeley (Markham, Univ. Colo. Studies, Vol. IV, p. 155 and plate ii, fig. 2.); and two noted several years ago by the writer, the one on the Platte River near Henderson, the other on the same river near Masters. Whether these last two heronries are still used by the herons, I cannot state.

197. **Egretta candidissima.** SNOWY EGRET.—Migrant; not rare. (April 3-Sept., Salida.) A southern species that comes into Colorado in summer regularly in small numbers and strings northward as far as Buffalo, Wyoming, where, I have been told, a specimen was shot by James Dowlin about April 11, 1904. The most northerly record within this area that I have comes from La Salle, where C. A. Kendrick reports that two or three have been shot on their club lakes. I have, aside from the two or three mentioned above as being reported by Mr. Kendrick, twenty-six additional records of this species for the State, ranging from the plains to

Salida (7038 feet), in Chaffee County, where ten were observed, seven being in one flock, and from an east and west line through that point northward nearly across the State. The most of these, aside from the ten at Salida, are from Denver and vicinity northward. The flock of seven at Salida was observed and reported by Mr. B. G. Voigt, deceased, and the other three were received by him to mount, one of them having been taken in the month of September. Not known to breed in Colorado.

[198. *Dichromanassa rufescens*. REDDISH EGRET.—Migrant; very rare in near-by area. Mr. Cooke's second record for Colorado was reported by E. L. Berthoud, "who shot one near Golden about eight years ago" (1890). (Birds of Colo., p. 157.)]

202. *Nycticorax nycticorax naevius*. BLACK-CROWNED NIGHT HERON.—Summer resident. (March 31, or April 1-Dec. 20-24.) In summer, abundant locally; in migration, abundant. H. G. Smith reports a bird uninjured and in good condition as having been shot from a tree between December 20 and 24, 1902, near Fort Lupton, Weld County, by T. L. Monson. (Auk, XXV, 1908, p. 185.) Though this is a winter date, it does not seem probable that this species, owing to its particular habits, will ever be found here as a resident all through the winter. Breeds abundantly along the Barr Lake Chain in low trees, on masses of bent-over cattails and rushes, and on the ground. Flocks of from twenty-five to two hundred may be seen all during the summer along this Chain.

[203. *Nyctanassa violacea*. YELLOW-CROWNED NIGHT HERON.—Migrant, very rare to the State, the only record noted by Cooke being a specimen in the Maxwell collection at Boulder. (Birds of Colo., p. 62.)]

[204. *Grus americana*. WHOOPING CRANE.—Migrant; rare in adjoining areas. (First half of April-?) Cooke mentions one noted by W. G. Smith at Loveland, and one in the museum of the State Agricultural College at Fort Collins. (Birds of Colo., p. 62.)]

[205. *Grus canadensis*. LITTLE BROWN CRANE.—Migrant; rare in near-by areas. (March-?) Cooke mentions a specimen as being in the museum of the State Agricultural College at Fort Collins, and also a specimen mounted by A. T. Allen that was shot several years prior to 1900. (Birds of Colo., pp. 62, 198.) There is a mounted specimen in the State Historical and Natural History Society that was shot by A. T. Allen at Boulder, in March, 1901.]

206. *Grus mexicana*. SANDHILL CRANE.—Migrant; uncommon (April 1-?; Oct. 10-about Oct. 25.) C. A. Kendrick states that about Oct. 25, 1908, he shot one at La Salle, Weld County. He also says that they see, at their club lakes at La Salle, about one flock during each year. On April 1, 1904, the writer saw what he took to be a flock of five of this species at the Barr Lake Chain.

212. *Rallus virginianus*. VIRGINIA RAIL.—Summer resident, or resident. In summer, common; in migration, more common. I mention it as a possible winter resident wholly on the strength of a statement to me by Mr. Fred Granville that he shot one of this species at Ralhouse

Lake, near Denver, on Jan. 13, 1906, near open water. A common breeder along the Barr Lake Chain. Have found eggs as late as June 20 that were not much incubated.

214. **Porzana carolina.** SORA.—Summer resident; common (April-Oct. 13.) A common breeder along the Barr Lake Chain, where I have found fresh eggs as early as May 28 and as late as June 13.

[216. **Creciscus jamaicensis.** BLACK RAIL.—Migrant; very rare in near-by area. (May-?.) But one record for Colorado referred to by Cooke as having been taken at Denver by Mr. David Bruce in May. (Birds of Colo., p. 158.)]

[219. **Gallinula galeata.** FLORIDA GALLINULE.—Migrant; very rare in near-by area. Cooke records one seen by E. L. Berthoud at Lathrop's Lake, 12 miles from Golden. (Birds of Colo., p. 158.)]

221. **Fulica americana.** AMERICAN COOT.—Summer resident. (Middle of March-Oct. 11) Abundant in both migration and summer, breeding abundantly along the Barr Lake Chain. I have found that by the 19th of May practically all the eggs are partially incubated and that some are nearly ready to hatch.

223. **Lobipes lobatus.** NORTHERN PHALAROPE.—Migrant; not uncommon. (May 18; Sept. 8.) Occurs regularly along the Barr Lake Chain.

224. **Steganopus tricolor.** WILSON'S PHALAROPE.—Summer resident; common. (May 3-?.) A regular breeder along the Barr Lake Chain, where flocks of from twenty-five to fifty females may be seen during the breeding season. I have found eggs advanced in incubation by May 28, and others on May 30 in which incubation had not yet begun.

225. **Recurvirostra americana.** AMERICAN AVOCET.—Summer resident; common. (April 8-Oct. 10.) A regular breeder all along the Barr Lake Chain where from one to half a dozen pairs may be seen in the more suitable breeding localities.

226. **Himantopus mexicanus.** BLACK-NECKED STILT.—Summer resident, probably; rare. (April-Nov. 5.) This bird is not often reported this side of the range. There is in the collection of the State Historical and Natural History Society a mounted specimen which was shot near Fort Logan in April, 1899. Judge Junius Henderson saw a bird, which he was very sure was of this species, at Windsor, Weld County, on Nov. 5, 1903.

228. **Philohela minor.** AMERICAN WOODCOCK.—Summer resident, probably; rare. (May 24-Oct.) Only a few records have been made in the State on this species, and of these the bulk come from in or near this area. H. G. Smith reports one on Aug. 12, 1885, and one in October, 1885, both from almost within the city limits of Denver. He also reports one from near Boulder for the fall of 1887, and one from near Fort Lupton, Weld County. (Auk, III, 1886, p. 284, and Nid., III, 1896, p. 65.) Cooke

records one that Dr. W. H. Bergtold saw in Denver in June, 1895; also a pair with three young found July 3, 1897, at Timnath, Larimer County, some two or three miles west of this area. (Birds of Colo., pp. 64, 158.) Judge Junius Henderson writes that on May 24 and also on May 30, 1904, he saw one of this species, presumably the same bird, one mile east of Boulder.

230. *Gallinago delicata*. WILSON'S SNIPE.— Winter resident. (Sept. 26-about May 1.) In migration, common; in winter, rather rare except in certain localities, such as the vicinity of warm springs along the Platte River, where one may expect to see a few of them all through the winter.

232. *Macrorhamphus scolopaceus*. LONG-BILLED DOWITCHER.— Migrant; not uncommon. (Last week in April-?; July 24-Sept. 30.) Mr. H. W. Henshaw's capture, near Denver, of a bird of this species on July 24, 1873, makes one wonder whether it may not be some day found breeding here. My own latest spring record is May 13.

233. *Micropalama himantopus*. STILT SANDPIPER.— Migrant; not common. (May-early June; latter part of July-Sept. 30.) I do not believe this bird to be as rare as appears from previous reports. It occurs regularly in small numbers along the Barr Lake Chain and I would not expect a season of systematic note-taking there to pass without seeing a few of them, or possibly several small flocks. It starts south early, in the latter part of July, and from my experience it is more common in fall than in spring migration.

239. *Pisobia maculata*. PECTORAL SANDPIPER.— Migrant; common. (First part of May-first part of June; latter part of July-Oct. 7.) Begins to return early, along with other species of sandpipers, in latter part of July.

[240. *Pisobia fuscicollis*. WHITE-RUMPED SANDPIPER.— Migrant; rare in adjoining area. Cooke states that it is "not uncommon" in the State, "finding its western limit at the base of the Rockies," and "reported by Osburn," presumably from Loveland. (Birds of Colo., p. 55.)]

241. *Pisobia bairdi*. BAIRD'S SANDPIPER.— Migrant, or summer resident. (April-Oct. 3.) The most abundant of our sandpipers and especially numerous during the late summer and fall. I have found them in the middle of June and through July in flocks ranging from twenty-five in the middle of June to two hundred or more by the end of the first week in July. The most of these flocks are wild and restless, as birds will be in migratory flight, flushing at 100-150 yards, swishing round and round, then many times towering high into the air and striking out to the south or southeast. Many of the members of these early flocks appear to be young. Some during these early summer periods are found also in ones, or twos, and while it is, I think, not known to breed this far south, these data force one to question whether it does not breed here or in the near-by mountains. This is my only excuse for adding, "or summer resident" after "migrant."

242. *Pisobia minutilla*. LEAST SANDPIPER.— Migrant, or summer

resident. (Latter part of April-Sept. 30.) In migration, very common; in summer, not uncommon. This is another perplexing little fellow, but I am emboldened to label it "or summer resident" with, perhaps a little more reason than in the case of Baird's Sandpiper, for in this case my notes indicate his presence during the entire summer and in June only in singles, or twos, or very small groups and not in flocks the size of those of *bairdi*.

[243a. *Pelidna alpina sakhalina*. RED-BACKED SANDPIPER.—Migrant; rare in adjacent localities. (April 29-June 1.) Cooke reports three specimens for Colorado, all from territory adjacent to this area; viz., one in the Maxwell collection at Boulder and two taken by W. G. Smith at Loveland, April 29 and May 9. (Birds of Colo., p. 66.)]

246. *Ereunetes pusillus*. SEMIPALMATED SANDPIPER.—Migrant; rather rare. (Last of April-May 24.) Cooke speaks of this species as "not uncommon... mostly on the plains and below 7000 feet." (Birds of Colo., p. 66.) In this particular area it is one of the rarer of the sandpipers.

[247. *Ereunetes mauri*. WESTERN SANDPIPER.—Migrant; rare in adjoining localities. (May 9-May 12; July 4-?) Cooke gives but four records, three of which are from territory adjoining this area: viz., one taken at Loveland by Prof. Wm. Osburn on July 4, 1899, and another on May 12, 1890; one taken at Loveland by W. G. Smith on May 9, 1890. (Birds of Colo., p. 66.)]

248. *Calidris leucophæa*. SANDERLING.—Migrant; rare in this and surrounding territory, being found only occasionally in spring and fall migration. This is a typical bird of the sea-shores, where it is abundant in migrations. During these periods it is, however, nearly cosmopolitan, being found on the larger bodies of water in the whole interior, and I believe that a more systematic search on our larger lakes will reveal them in greater numbers here.

249. *Limosa fedoa*. MARBLED GODWIT.—Migrant; not common. (May 3-?) While this bird is never common, I expect to see a few along the Barr Lake Chain every season, especially in the spring. I have no breeding records for this area, but it will not be surprising if it is found to breed here.

254. *Totanus melanoleucus*. GREATER YELLOW-LEGS.—Migrant or summer resident. (March 29-Oct. 29.) In migration, common, but not nearly so common as the Lesser Yellow-legs, the flocks of the former usually consisting of from five to fifty or sixty birds, while those of the latter consist of as high as several hundred birds. I have noted this species during every month from March to October, and, though I have no records of nests within this area, I believe it will yet be found breeding here.

255. *Totanus flavipes*. YELLOW-LEGS.—Migrant or summer resident. (April-October.) This species is found at about the same time and in about the same localities as the previous species and I believe that this bird will also some day be found breeding here.

256. *Helodramus solitarius*. SOLITARY SANDPIPER.—Migrant; rather uncommon. (?-May 9; Aug. 20-Sept. 25.) Not known to breed.

258a. *Catoptrophorus semipalmata inornata*. WESTERN WILLET.—Migrant or summer resident. (April-Sept. 5.) I have notes on this species covering the most of the summer and believe it will yet be found breeding here.

261. *Bartramia longicauda*. BARTRAMIAN SANDPIPER.—Summer resident. (Latter part of April-Aug. 23.) In summer common locally. I have never found this species to be what I would call abundant at any time of the year in Colorado. I have not seen many of them along the Barr Lake Chain, and in other localities I have found them in flocking time in not large numbers.

263. *Actitis macularia*. SPOTTED SANDPIPER.—Summer resident. (Third week in March-Sept. 21.) In summer, common; in migration, very common. Cooke says, "a few remain until far into the winter, if not through the winter."

264. *Numenius americanus*. LONG-BILLED CURLEW.—Summer resident. (March 31-Oct. 22.) A common bird on the plains in suitable localities. Common along the Barr Lake Chain.

[265. *Numenius hudsonicus*. HUDSONIAN CURLEW.—Migrant; rare in near-by areas. (About May 1-?.) Cooke says, "All the records of this Curlew in Colorado come from the plains region east of the mountains." (Birds of Colo., p. 67.) Upon this statement alone, it is placed here in the hypothetical list.]

270. *Squatarola squatarola*. BLACK-BELLIED PLOVER.—Migrant; not uncommon locally. (Last week of March-latter part of May; Sept. 12-Oct. 22.) They are present along the Barr Lake Chain at some time during perhaps every migrating season, in numbers varying from one to twenty-five or more.

272. *Charadrius dominicus*. AMERICAN GOLDEN PLOVER.—Migrant; uncommon. (Last week in March-?.) This species is only occasionally seen along the Barr Lake Chain, it being not nearly so common, as far as my experience goes, as the Black-bellied Plover.

273. *Oxyechus vociferus*. KILLDEER.—Summer resident or resident. (Feb. 3-Dec. 31.) In summer and migration, abundant; in December and February, rare. I can all but call it with certainty a resident, since I have never noted it in January, but I am still hopeful of finding it all through the winter about the warm springs down the Platte River, or at open water elsewhere.

274. *Ægialitis semipalmata*. SEMIPALMATED PLOVER.—Migrant; rare. Although found in migration over the whole of North America this is the rarest of our plovers. It stops here only occasionally in its migratory flight between its breeding grounds in the far North and its winter home in Middle and South America.

281. *Podasocys montanus*. MOUNTAIN PLOVER.—Summer resident; common. (March 23-Oct. 12.) A common breeder on the plains. Have found eggs to be advanced in incubation as early as May 14, and young about a day out of the egg on June 23.

[283. *Arenaria interpres*. TURNSTONE.—Migrant; rare in near-by localities (about April 26-May 18.) H. G. Smith records one taken at Sloan's Lake, near Denver, on April 26, 1890 (Nid., III, 1896, p. 65), and Cooke records eight seen at Berkeley Lake, near Denver, on May 18, 1900. (Birds of Colo., p. 201.)]

AN INSTANCE OF HYBRIDIZATION IN HUMMING-
BIRDS, WITH REMARKS ON THE WEIGHT OF
GENERIC CHARACTERS IN THE
TROCHILIDÆ.

BY WALTER P. TAYLOR.¹

WHILE collecting in the vicinity of Nicasio, Marin County, for the Museum of Vertebrate Zoölogy on February 26, 1909, I shot a small hummingbird which I took to be *Selasphorus alleni*. My attention has been called to the fact, however, that it is a hybrid, probably the result of a cross between *Selasphorus alleni* and *Calypte anna*. According to Ridgway, it was with little doubt such a hybrid upon which Gould based his description of *Selasphorus floresii* (Mon. Troch., pt. xxiii, Sept. 1, 1861, pl. 10; Vol. III, 1861, pl. 139), from a specimen taken at Bolanos, State of Oaxaca, Mexico.

There have been to my knowledge previous to this date three definite records only of the taking of this hybrid. One of these is the type of *Selasphorus "floresii,"* taken at Bolanos. The second is a bird found by Walter E. Bryant in a taxidermist's shop in San Francisco (first recorded in 'Forest and Stream,' XXVI, June, 1886, p. 426). This specimen was "shot by a boy" near San Francisco, and had been mounted to serve as an ornament on a hat. The third record is that of the taking of a male specimen at Haywards, California, by W. Otto Emerson (Condor, III, May, 1901, p. 68). Through the courtesy of the latter I have seen this bird. It is almost identical in coloration and size with the hybrid taken by me at Nicasio, though it resembles *Calypte anna* even more than the Marin County bird.

¹ A Contribution from the University of California Museum of Vertebrate Zoölogy

In addition to these definite records Bendire mentions "*floresii*" as having been recorded from Jalisco, Mexico (Life Histories, II, 1895, p. 209); but he does not say upon whose authority the record is made, nor does he give any information upon the subject. The present record is, at all events, the third for California.

The bird (No. 7125, Univ. Calif. Mus. Vert. Zoöl.) is in most characters an intermediate between *Calypte anna* and *Selasphorus allenii* but in general appearance is nearer the former. Like former specimens of "*floresii*" it has the gorget and crown "glowing metallic rose-red." The brilliant crown is not so extensive as in *Calypte anna*, however, and there is a decided *Selasphorus*-like golden tinge to all the iridescent gorget and crown feathers. The feathers of breast, belly, and sides resemble *Calypte anna*, but there are some distinct traces of rufous. The breast is whiter than that of the Anna, but not so white as that of the Allen Hummingbird. The feathers of the occiput, nuchal region, back and rump, and the upper tail-coverts are green with narrow edgings of rufous. The first primary is much narrower than in *Calypte anna*, though its end is rounded rather than pointed. The tail is much less deeply emarginate than that of the Anna, which it nevertheless resembles in general shape. All of the rectrices are marked to a greater or less extent with rufous. The color appears to be rather unevenly distributed, some of the feathers having the basal half of their outer webs, and others a part of their inner webs, rufous. The elongated lateral ruff-like extensions of the gorget are similar to those of *Calypte anna* but not so highly developed.

Taking into account the animal kingdom as a whole it is noted that while hybridization between species is as a rule not common (outside of birds, at least) that between genera is extremely rare. Thayer and Bangs have called attention to the proneness of various hummingbirds to hybridize, and list from California alone four cases of the crossing of the so-called distinct genera (Auk, XXIV, July, 1907, p. 313).

In the light of results obtained from experimentation by Whitman, Beebe, and others, it is a question whether feather differences alone are of sufficient morphologic significance to constitute the characters of genera. Apparently the former genus *Trochilus* has been split up into several genera on the basis of characters of specific importance only.

A moment's consideration is sufficient to convince one that both in separating the genera *Trochilus*, *Selasphorus* and *Calypte*, and in distinguishing between the species within each respective genus, characters of practically equal rank have been used. For example, compare the kind of characters used by Ridgway (Report U. S. Nat. Mus., 1890, p. 340) in diagnosing the genus *Selasphorus*, with those which separate *alleni* from *rufus* within the genus. Feather coloration generally, the form of the outer primary, and the form and coloration of the tail-feathers are perhaps the most important of the "generic" characters. Upon turning to the species descriptions it becomes evident at once that characters of the same importance have been made use of. The clearest distinction between *rufus* and *alleni*, apparently consists in a difference in form of tail-feather, *rufus* possessing a notch on the inner web of the next to the middle pair of rectrices which *alleni* does not have. At the same time the "generic" characters of the most weight concern the form of the feathers of tail and wing. It would seemingly be as reasonable to put *Selasphorus alleni* in one genus and *Selasphorus rufus* in another, as to split up *Trochilus* on the basis of characters of no more weight than those separating these two species.

There are differences between *Calypte*, *Selasphorus* and the present *Trochilus* to be sure, but are the differences of such importance that these subdivisions should be accorded generic rank? The relatively frequent occurrence of hybrids would seem to support a negative answer to this question.

So far, there have been recorded from California hybrids of *Calypte anna* + *Trochilus alexandri*, *Calypte anna* + *Selasphorus alleni*, *Trochilus alexandri* + *Calypte costæ*, and *Selasphorus rufus* + *Stellula calliope* (Thayer & Bangs, l. c.). It will be observed that the Trochiline hybrids occur only between species whose ranges overlap or adjoin, isolation of habitat therefore being perhaps the main reason why other combinations do not appear.

FIFTEENTH SUPPLEMENT TO THE AMERICAN
ORNITHOLOGISTS' UNION CHECK-LIST OF
NORTH AMERICAN BIRDS.

THE Fourteenth Supplement to the Check-List was published in 'The Auk' for July, 1908 (XXV, pp. 343-399). The present Supplement gives the results of the Committee's work at its meetings held in Cambridge, Mass., November 16, 1908, and in Washington, April 13-17, 1909. At the Washington meeting all questions before it relating to the names and status of species, subspecies, and higher groups were disposed of in preparation for the new (third) edition of the Check-List, the manuscript for which is now nearly ready for the press. The present Supplement is therefore the final report of the Committee in relation to the preparation of the new Check-List.

It was finally decided, on the ground of convenience, to retain the order of arrangement of the higher groups (orders, suborders, families, etc.) followed in the former editions of the Check-List, for reasons more fully stated in the Preface to the new edition. It was also found desirable to omit the numeration of the species. It was further decided (in opposition to a former ruling of the Committee) to continue to use the possessive form, as heretofore, in vernacular names based on the names of persons.

The vernacular names employed in the Check-List were carefully scrutinized with a view to their modification in cases where names could be found that are more in accord with those in use where the birds live. A number of popular vernacular names were thus substituted for 'book names.' It was also decided to omit 'American' as a prefix, as being superfluous in a list of North American Birds. On the other hand, European birds, with the same vernacular names as their American representatives, are distinguished by the prefix 'European.'

The Fourteenth Supplement contained a list (*l. c.*, p. 399) of 16 generic cases that had been referred to the Nomenclature Commission of the International Zoölogical Congress for decision. Unfortunately the Committee has been disappointed in its expectation of obtaining a report from the Commission in time to incorporate its decisions in the new edition of the Check-List. In the

first 12 of these cases the names involved are allowed to stand as in the previous editions of the Check-List, with the exception of the case of *Chæmepelia*, which in the present Supplement (below, p. 300) is adopted in place of the untenable name *Columbigallina*. The last four names are the 'Swainsonian genera,' of late under controversy but now accepted in accordance with the law of priority.

The list of 'deferred cases' is now reduced to 12, 11 of which relate to the status of forms that have been described as species or subspecies, and one is a case of nomenclature. In each of these cases the Committee has been unable to secure material for their proper consideration.

Committee.	{	J. A. ALLEN, <i>Chairman</i> .
		CHARLES W. RICHMOND, <i>Secretary</i> .
		WILLIAM BREWSTER.
		JONATHAN DWIGHT, JR.
		C. HART MERRIAM.
		ROBERT RIDGWAY.
		WITMER STONE.

I. ADDITIONS TO THE CHECK-LIST.

133a. *Anas rubripes tristis* BREWSTER.

Black Duck.

Anas rubripes tristis BREWSTER, Auk, XXVI, April, 1909, 176.

197.1. *Egretta candidissima brewsteri* THAYER & BANGS.

Brewster's Snowy Egret.

Egretta candidissima brewsteri THAYER & BANGS, Proc. New Engl. Zoöl. Club, IV, April 29, 1909, 40.

301b. *Lagopus lagopus alexandræ* J. GRINNELL.

Alexander's Ptarmigan.

Lagopus alexandræ GRINNELL, Univ. Calif. Pub. Zoöl., V, No. 2, Feb. 18, 1909, 204.

302e. *Lagopus rupestris chamberlaini* CLARK.

Adak Ptarmigan.

Lagopus rupestris chamberlaini CLARK, Proc. U. S. Nat. Mus., XXXII, No. 1539, June 15, 1907, 469.

- 302f. **Lagopus rupestris dixonii** J. GRINNELL.

Dixon's Ptarmigan.

Lagopus dixonii GRINNELL, Univ. Calif. Pub. Zoöl., V. No. 2,
Feb. 18, 1909, 207.

- 337e. **Buteo borealis alascensis** J. GRINNELL.

Alaska Red-tail.

Buteo borealis alascensis GRINNELL, Univ. Calif. Pub. Zoöl.,
V, No. 2, Feb. 18, 1909, 211.

SUBFAMILY **POLYBORINÆ.**

Admitted as a subfamily, to include Nos. 362 and 363.

- 393g. **Dryobates villosus terrænovæ** BATCHELDER.

Newfoundland Woodpecker.

Dryobates villosus terrænovæ BATCHELDER, Proc. New Engl.
Zoöl. Club, IV, June 24, 1908, 37.

- 581s. **Melospiza melodia maxillaris** J. GRINNELL.

Suisun Song Sparrow.

Melospiza melodia maxillaris GRINNELL, Univ. Calif. Pub.
Zoöl., V, No. 3, April 9, 1909, 265.

II. ELIMINATIONS.

- [359.1.] **Falco tinnunculus** LINNÆUS. Excluded on the basis
of recent evidence that it was included in the Check-List on
erroneous information.

- 622d. **Lanius ludovicianus mearnsi** RIDGWAY. Considered as
indistinguishable from *L. l. anthonyi*. (Cf. LINTON, Condor,
X, 1908, 182.)

III. CHANGES IN NOMENCLATURE, INCLUDING CHANGES IN STATUS.

- [106.2.] **Oceanodroma castro** (HARCOURT). Brackets to be re-
moved.

GENUS **PAVONCELLA** LEACH. This, being a *nomen nudum*, becomes

GENUS **MACHETES** CUVIER.

Machetes CUVIER, Règne Animal, I, 1817, 490. Type, *Tringa pugnax* LINNÆUS.

No. [260] thus becomes

[260] **Machetes pugnax** (LINNÆUS).

SUBFAMILY **PERDICINÆ**. PARTRIDGES. This becomes

FAMILY **ODONTOPHORIDÆ**. BOB-WHITES, QUAILS, ETC.

SUBFAMILY **TETRAONINÆ**. This becomes

FAMILY **TETRAONIDÆ**. GROUSE, SPRUCE PARTRIDGES, PTARMIGANS, ETC.

FAMILY **PHASIANIDÆ**. This becomes

FAMILY **MELEAGRIDÆ**. TURKEYS.

GENUS **COLUMBIGALLINA** BOIE. Within the limits of the Check-List, this is changed to

GENUS **CHÆMEPELIA** SWAINSON.

Chæmepelia SWAINSON, Zoölogical Journal, III, Dec., 1827, 361. Type, *Columba passerina* LINNÆUS.

No. 320 and its subspecies require correction as follows:

320. **Chæmepelia passerina terrestris** (CHAPMAN).

320a. **Chæmepelia passerina pallescens** BAIRD.

320b. **Chæmepelia passerina bermudiana** (BANGS & BRADLEE).

SUBFAMILY **ACCIPITRINÆ**. Becomes

FAMILY **BUTEONIDÆ**.

SUBFAMILY **FALCONINÆ**. This becomes

FAMILY **FALCONIDÆ**. To include the subfamilies *Falconinæ* and *Polyborinæ*.

SUBFAMILY **PANDIONINÆ**. This is given family rank, as

FAMILY **PANDIONIDÆ**.

GENUS **GLAUX** MORRIS. This, strictly interpreted, is a *nomen nudum*, and again becomes

GENUS **CRYPTOGLAUX** RICHMOND.

Cryptoglaux RICHMOND, Auk, XVIII, April, 1901, 193. Type, *Strix tengmalmi* GMELIN = *S. funerea* LINNÆUS.

Nos. 371-372a will thus remain as given in the Thirteenth Supplement (Auk, XXI, 1904, 413), with the change of the species name from *tengmalmi* to *funerea*, as given in the Fourteenth Supplement (Auk, XXV, 1908, 371).

GENUS **TROCHILUS** LINNÆUS. This is changed to

GENUS **ARCHILOCHUS** REICHENBACH.

Archilochus REICHENBACH, Journ. für Orn., 1853, Extra-Heft, 1854 (Aufz. der Colib.), 13. Type, *Trochilus alexandri* BOURCIER & MULSANT.

The following changes are necessitated in nos. 428 and 429:

428. **Archilochus colubris** (LINNÆUS).

429. **Archilochus alexandri** (BOURCIER & MULSANT).

GENUS **COTURNICULUS** BONAPARTE. This becomes

GENUS **AMMODRAMUS** SWAINSON.

Ammodramus SWAINSON, Philos. Magazine, n. s., I, June, 1827, 435. Type, *Ammodramus bimaculatus* SWAINSON.

Nos. 545-546b become

545. **Ammodramus bairdi** (AUDUBON).

546. *Ammodramus savannarum australis* MAYNARD.
546a. *Ammodramus savannarum bimaculatus* SWAINSON.
546b. *Ammodramus savannarum floridanus* (MEARNS).

SUBGENUS **AMMODRAMUS** SWAINSON. This is changed to

GENUS **PASSERHERBULUS** MAYNARD.

Passerherbulus MAYNARD, Birds Eastern N. A., 2d ed., Pt. 40,
1895, 707. Type, *Emberiza leconteii* AUDUBON.

Nos. 547-551 thus become

547. *Passerherbulus henslowi* (AUDUBON).
547a. *Passerherbulus henslowi occidentalis* (BREWSTER).
548. *Passerherbulus lecontei* (AUDUBON).
549. *Passerherbulus caudacutus* (GMELIN).
549.1. *Passerherbulus nelsoni* (ALLEN).
549.1a. *Passerherbulus nelsoni subvirgatus* (DWIGHT).
550. *Passerherbulus maritimus* (WILSON).
550a. *Passerherbulus maritimus peninsulæ* (ALLEN).
550b. *Passerherbulus maritimus sennetti* (ALLEN).
550c. *Passerherbulus maritimus fisheri* (CHAPMAN).
550d. *Passerherbulus maritimus macgillivraii* (AUDUBON).
551. *Passerherbulus nigrescens* (RIDGWAY).

GENUS **HELMINTHOPHILA** RIDGWAY. This becomes

GENUS **VERMIVORA** SWAINSON.

Vermivora SWAINSON, Philos. Magazine, n. s., I, June, 1827,
434. Type, *Sylvia solitaria* WILSON = *Certhia pinus*
LINNÆUS.

Nos. 640-647 thus become

640. *Vermivora bachmani* (AUDUBON).
641. *Vermivora pinus* (LINNÆUS).
642. *Vermivora chrysoptera* (LINNÆUS).
643. *Vermivora luciae* (COOPER).

644. *Vermivora virginiae* (BAIRD).
 645. *Vermivora rubricapilla* (WILSON).
 645a. *Vermivora rubricapilla gutturalis* (RIDGWAY).
 646. *Vermivora celata* (SAY).
 646a. *Vermivora celata lutescens* (RIDGWAY).
 646b. *Vermivora celata sordida* (C. H. TOWNSEND).
 647. *Vermivora peregrina* (WILSON).
 662. *Dendroica blackburniae* (GMELIN). This is changed to
 662. *Dendroica fusca* (P. L. S. MÜLLER).

Motacilla fusca MÜLLER, Natursyst. Suppl., 1776, 175. (Cf.
 BERLEPSCH, Novit. Zool., XV, 1908, 315.)

This change is made necessary by reason of *Motacilla fusca*
 MÜLLER having priority over *M. blackburniae* GMELIN.

IV. PROPOSED ADDITIONS AND CHANGES NOT ACCEPTED.

*Plautus*¹ vs. *Alca*.

Thalasseus vs. *Hydroprogne*.

Actochelidon vs. *Thalasseus*.

Fulmarus vs. *Rhantistes*.

Herodias vs. *Leucophoyx*.

Lophortyx catalinensis GRINNELL, Auk, XXIII, 1906, 262. Re-
 considered and again found not entitled to recognition.

Chæmepelia vs. *Columbina*.

Catharista vs. ———?

Urubitinga vs. *Morphnus*.

Speotyto cunicularia becki ROTHSCILD & HARTERT, Nov. Zool.,
 IX, 1902, 405. The Guadeloupe Island form is too slightly
 differentiated to warrant recognition.

Ceryle vs. *Alcedo*.

Picoides americanus fumipectus GRINNELL, Univ. Calif. Pub. Zool.,
 V, 1909, 217. The single known specimen considered as not a
 satisfactory basis for the admission of this form.

Otocoris alpestris enertera OBERHOLSER, Proc. Biol. Soc. Wash.,
 XX, 1907, 41. Regarded as too close to *O. a. pallida*.

¹ In reference to the generic cases here listed see *antea*, p. 295.

Agelaius phœniceus arctolegus OBERHOLSER, Auk, XXIV, 1907, 332. Not satisfactorily distinguishable.

Loxia curvirostra sitkensis GRINNELL, Univ. Calif. Pub. Zoöl., V, 1909, 223. It was found that the alleged characters appear in birds from various parts of the range of *L. c. minor*.

Acanthis vs. *Ægiothus*.

Zonotrichia vs. *Hortulanus*.

Melospiza melodia saltonis GRINNELL, Univ. Calif. Pub. Zoöl., V, 1909, 268. Not satisfactorily distinguishable from *M. m. fallax*.

Melospiza melodia gouldi, cf. GRINNELL, Univ. Calif. Pub. Zoöl., V, 1909, 267. Regarded as too near *M. m. samuelis*.

Tiaris vs. *Euethia*.

Bombycilla garrula pallidiceps REICHENOW, Orn. Monatsb., XVI, 1908, 191. No appreciable differences could be found between birds from Europe and various parts of the Northwest, when birds comparable as to season, age, and sex were compared.

Vireo huttoni oberholseri BISHOP, Condor, VII, Sept. 1905, 142, 143. Based on a seasonal phase of plumage. (Cf. GRINNELL, Condor, XI, March, 1909, 66.

Helinaia — ?

The following generic names, proposed in Maynard's Directory to the Birds of Eastern North America, 1907, are not accepted:

Caeruleocantor, p. 236. Type, *Motacilla caeruleascens* GMELIN.

Maculocantor, p. 238. Type, *Motacilla maculosa* GMELIN.

Azuria, p. 238. Type, *Sylvia rara* WILSON.

Sylviocantor, p. 239. Type, *Motacilla pensylvanica* LINNÆUS.

Lineocantor, p. 240. Type, *Motacilla striata* FORSTER.

Piceacantor, p. 241. Type, *Motacilla blackburniae* GMELIN.

Vireocantor, p. 242. Type, *Motacilla virens* GMELIN.

Agreocantor, p. 243. Type, *Sylvicola kirtlandii* BAIRD.

Pinacantor, p. 244. Type, *Sylvia vigorsii* AUDUBON.

Terracantor, p. 245. Type, *Motacilla palmarum* GMELIN.

Fruticantor, p. 246. Type, *Sylvia discolor* VIEILLOT.

Frutiornis, p. 251. Type, *Sylvia formosa* WILSON.

Turdus iliacus vs. *T. philomelos* [BREHM, 1831] (cf. HARTERT, Bull. Brit. Orn. Club, XXXIII, No. cxlviii, Feb. 2, 1909, 54).

Planesticus migratorius caurinus, GRINNELL, Univ. Calif. Pub. Zool., V, 1909, 241.

V. DEFERRED CASES.

Acanthopneuste borealis vs. *A. b. kennicottii*.

Accipiter velox rufilatus RIDGWAY.

Anas boschas spilogaster SCHIOLER.

Ardea herodias treganzai COURT.

Bæolophus inornatus murinus RIDGWAY.

Glaucidium phalænoides vs. *G. p. ridgwayi*.

Larus vegæ vs. *L. argentatus*.

Melospiza cinerea phæa FISHER.

Oceanodroma socorroensis vs. *O. monorhis*.

Pinacantor vigorsii florida MAYNARD.

Telmatodytes palustris thryophilus OBERHOLSER.

Totanus melanoleucus frazari BREWSTER.

VI. CHANGES IN VERNACULAR NAMES.

In addition to the list of changes given below it was decided to omit 'American' as a part of the vernacular name, and to add 'European' where necessary. Also to abandon the adjectival form of geographical names, as Bahaman, Californian, Texan, etc., for Bahama, California, Texas, etc., except where the adjectival form is required for euphony, as in Acadian, Cuban, Mexican, etc.; and to substitute Northwestern for Northwest, where such designations occur.

St. Domingo Grebe	becomes Mexican Grebe.
Dark-bodied Shearwater	" Sooty Shearwater.
Stormy Petrel	" Storm Petrel.
Tropic Bird	" Tropic-bird.
Anhinga	" Water-Turkey.
Man-o'-War Bird	" Man-o'-war-bird.
Widgeon	" European Widgeon.
Steller's Duck	" Steller's Eider.
Lesser Snow Goose	" Snow Goose.
Ross's Snow Goose	" Ross's Goose.
White-bellied Brant	" Brant.
Whooping Swan	" Whooper Swan.

European Blue Heron	becomes European Heron.
Snowy Heron	" Snowy Egret.
Greater Snipe	" Great Snipe.
Bartramian Sandpiper	" Upland Plover.
Ring Plover	" Ringed Plover.
Little Ring Plover	" Little Ringed Plover.
Surf-Bird	" Surf-bird.
Partridge	" Quail, in Nos. 292-296.
Canada Grouse	" Spruce Partridge.
Prairie Hen	" Prairie Chicken.
Sage Grouse	" Sage Hen.
Florida Wild Turkey	" Florida Turkey.
Black Merlin	" Black Pigeon Hawk.
Richardson's Merlin	" Richardson's Pigeon Hawk.
Green-crested Flycatcher	" Acadian Flycatcher.
American Raven (No. 486)	" Western Raven.
Bicolored Blackbird	" Bicolored Red-wing.
Tricolored Blackbird	" Tricolored Red-wing.
House Finch	" California Linnet.
Leucosticte (Nos. 523-526)	" Rosy Finch.
Snowflake (Nos. 534-535)	" Snow Bunting.
Sandwich Sparrow	" Aleutian Savannah Sparrow.
Savanna ¹ Sparrow	" Savannah Sparrow.
Bryant's Marsh Sparrow	" Bryant's Sparrow.
Belding's Marsh Sparrow	" Belding's Sparrow.
Townsend's Sparrow	" Townsend's Fox Sparrow, and the word 'Fox' is added in the names of all the sub- species of No. 585.
Louisiana Tanager	" Western Tanager.
Parkman's Wren	" Western House Wren.
Turner's Chickadee	" Yukon Chickadee.
Wilson's Thrush	" Veery.

The word 'Bewick's' is to be omitted from all the subspecies under No. 719, except the first.

Ridgway's vernacular names, in 'Birds of North and Middle America,' are adopted for the species and subspecies of *Chamaea*.

'Macgillivray's Warbler' is *not* changed to 'Tolmie's Warbler.'

¹ Named from the city of Savannah.

GENERAL NOTES.

Additional Record of the European Widgeon (*Mareca penelope*).— I am indebted to Judge Lewis Rinaker of Chicago, for the opportunity of recording the capture of another specimen of this rare visitor. While duck-shooting on Snackwine Lake, Putnam Co., Illinois, April 13, 1909, Judge Rinaker shot a male of this species from a pair which came to his decoys. Whether his mate was of English or American descent, could not be determined. The specimen is now the property of Mr. Richard A. Turtle of Chicago. This record makes the twenty-first for the interior.— RUTHVEN DEANE, *Chicago, Ill.*

Capture of the European Widgeon in New Hampshire.— I received on Nov. 17, 1908, from Peabrook, N. H., a young male European Widgeon (*Mareca penelope*). This bird was taken in company with a flock of Black Ducks by a market gunner in that locality. I intend to present it to the Boston Society of Natural History.— JOHN H. HARDY, JR., *Arlington, Mass.*

The Lesser Snow Goose (*Chen hyperborea nivalis*) in Gorham, Maine.— During the week of November 16 to 21, 1908, one of these birds was shot by a fox hunter in a field in Gorham, Maine. The bird was much emaciated and in the immature plumage in which it is usually seen in Maine. It was mounted by, and is in the possession of, Mr. Leonard Leighton, of Westbrook, where I made an examination of it.— ARTHUR H. NORTON, *Portland, Me.*

A Second Record for the Fulvous Tree-duck taken in Missouri.— Through the kindness of Mr. Wm. L. Evers of Quincy, Ill., I am enabled to report the capture of a second specimen of the Fulvous Tree-duck, *Dendrocygna fulva*, for Missouri. This bird, a male, was shot by Mr. Evers, April 29, 1909, on the prairie of Lewis County, Mo., about latitude 40°, and just across the Mississippi River from Quincy. Mr. Evers kindly gave me the following particulars: "When the bird came over me, I, at first, thought it was a large Curlew. The flight was sailing like that of a hawk, and its note a peculiar whistle. It was alone and from the noise it was making seemed to be lost. It was in perfect physical condition and made a fine specimen for my collection. The identification was corroborated by Mr. Otho C. Poling of Quincy, formerly an ardent ornithologist, now chiefly engaged in the scientific study of lepidoptera." April 29 was the hottest day of the month in Missouri with an official temperature of 8° at Hannibal (near Quincy). A very low barometer of 29.25 covered northern Missouri, attended by a hard gale from the south over the entire area from southern Texas northward, with maximum temperatures of 102° at Del Rio, 98° at San Antonio, and 96° at Fort Worth.— O. WIDMANN, *St. Louis, Mo.*

Third Record of the Purple Gallinule (*Ionornis martinica*) in Illinois.—

I am indebted to Mr. W. A. Powers of Wilington, Ill., for information regarding the capture of a specimen of this species, which is rare for this State. The bird was killed by Mr. Powers while snipe-shooting near Wilington, Will Co., Ill., on April 26, 1909. It is mounted and now in his possession. The two previous records for the State are recorded in 'The Auk,' Vol. XIX, 1902, p. 77.—RUTHVEN DEANE, *Chicago, Ill.*

Wilson's Snipe wintering in Pennsylvania.—While out collecting on January 27, 1909, my friend, Mr. Foster White, obtained a fine specimen of the Wilson's Snipe (*Gallinago delicata*) in a small swampy area near State College, Center County, Pennsylvania. The rarity of the species at this season in Pennsylvania is at once apparent, and in Center County its occurrence is astonishing, as the whole valley in which State College lies is some twelve hundred feet above the level of the sea. Previous to the capture of this bird, I had observed specimens lingering in the same swamp as late as December 5, and again on the 12th, of the year 1908.—RICHARD C. HARLOW, *State College, Pa.*

The Lesser Yellow-legs in Center County, Pennsylvania.—The Lesser Yellow-legs (*Totanus flavipes*) is one of the rarest of the spring waders in Pennsylvania, and it gives me pleasure to be able to record the species for the first time from Center County. The first specimen was taken on April 1, 1909, by Mr. Foster White, near State College, Pennsylvania. While collecting in the same vicinity on April 20, 1909, I observed another of the same species and finally collected it. These two captures stand alone as representing the status of the Lesser Yellow-legs in Center County.—RICHARD C. HARLOW, *State College, Pa.*

Early Nesting of the Barn Owl in Delaware.—In a Wilmington, Del., newspaper for April 20, 1909, is a rather sensational report of the capture on April 19 of a strange bird on a marsh near that city, and in the same paper for April 22, A. D. Poole, Esq., President of the Delaware Game Protective Association, identified the bird as a juvenile Barn Owl (*Aluco pratincola*), and in a letter to me Mr. Poole says the bird was apparently about six weeks old. On April 25, I saw this bird. It was confined in a large wire cage, such as are sometimes used for Parrots. The owner told me it had been found on the ground, and was unable to fly. This was evident. The primaries were now fairly well developed but many of the wing feathers were only just protruding from the sheaths; down was on many of the feathers of the back and the entire under parts were covered with down. The tail was but little over half adult length. It twice climbed up the sides of the cage and exercised its wings. The development was not quite as far advanced as Mr. Finley in his 'American Birds' shows as "8 weeks old." It was probably about seven weeks old, and if so, and allowing two weeks for hatching, the egg must have been laid by February 21, which is very much earlier than the usually recorded dates.

In 'Cassinia' for 1904, Mr. Thos. H. Jackson gives May 15, "one egg was already pipped." "Early in May...another...nest of six eggs was found...." Again, "Early in December, 1904, a young Barn Owl was found dead...it was still partly covered with down and could not have been over 8 weeks old, so that it must have been hatched about the first of October. This would seem to confirm some of the accounts we have had of the irregular nesting habits of these birds."

Audubon gives dates: a single egg, November 8, 1832 (St. Augustine, Fla.); at Charleston, S. C., "The eggs...must have been laid....about the 15th of September [1833]." Other dates for nesting I find are: Santa Clara, Cala., April 14, 1891, 4 eggs (Reed); Rio Frio, Texas, May (Bd., Br. and Ridg.). Dr. A. K. Fisher says in 'The Hawks and Owls of the United States,' p. 137, in summarizing the nesting time of this species: "Except in the more northern parts of its range, where it breeds as late as June, it is probable that the majority of eggs are deposited in March." Maj. Bendire states, 'Life Histories of North American Birds,' Pt. 1, p. 327: "...At Washington City, District of Columbia....they begin nesting from the last week in April to about the 10th of May."

As the species is not found breeding on the Atlantic slope much farther north than Wilmington, Del., this young bird must have been from an unusually early nesting pair, or the early dates heretofore have been overlooked.—C. J. PENNOCK, *Kennett Square, Pa.*

Northern Breeding Limit of the Chuck-wills-widow.—In 'The Auk' (XXV, 1908, p. 478) I gave what I believed to be the first record of the breeding of this species north of James River, Virginia. Yesterday, May 23, while walking through an open piece of pine woods near my house about 6.30 P. M., I flushed a female from a set of two eggs, which I found were incubated about five days. This is exactly a year to a day from the date my father took the first set. While two pairs have been around my home since April 4, and I have seen them flit by about dusk, it has only been within the last two weeks that I have been able to flush one in the day time. I think it is safe to say their breeding range extends northward to the high river banks on the north shore.—H. H. BAILEY. *Newport News, Va.*

The Starling near Springfield, Mass.—A Starling (*Sturnus vulgaris*) was caught by a cat, in Hadley, eighteen miles north of Springfield, January 25, 1909. In February and through the early spring a number of these birds were seen in this vicinity, and during the present month a pair has been found breeding in Agawam, on the west side of the Connecticut River. Apparently the range of the Starling in this country is extending north and inland.

I do not think it is probable that the Starlings that have recently been seen in this vicinity are the survivors or descendants of those introduced here twelve years ago. At least it is not possible that these birds could

have been residents of this region for more than ten years without their presence being noticed. There are more observers of birds here than there were forty years ago, and the least reliable of these would hardly be mistaken in identifying a Starling, especially if it was seen during the colder months.—ROBERT O. MORRIS, *Springfield, Mass.*

The Capture of the Red-eyed Cowbird in Arizona.—It is with the greatest pleasure that I report the capture of an adult male of *Tangavius aeneus involucratus* from near Tucson, Ariz. As far as I have learned, this bird has hitherto been found only in Texas and eastern and southern Mexico. However, it is certainly more than an accidental visitor here. I have seen it for over a month (from April 11 to May 21). A few days ago I noted two males courting a female. They held their heads up very high, as all cowbirds do, but followed each other around very sedately. The males took turns in driving the other a short distance away, and following the female. Yesterday a male, before a female, went through contortions similar to those frequently preformed by the domestic gobbler. Resting on his tarsi, with wings and tail spread and ruff raised, he quivered very noticeably. The slight movement of the wings slowly raised him, still trembling, some six feet above the female, where he paused a moment, a droll sight, and then sank slowly down beside his would-be mate, apparently quite exhausted by the violent, unusual exercise. The song is an even more pleasing combination of squeaks than that of the common cowbird. I have heard it only from solitary males in trees.

Whether these birds crossed New Mexico, or whether they came up the west coast of Mexico, is a question. At any rate they are far out of their supposed range. The specimen is in the University of Arizona Museum.—S. S. VISHER, *Carnegie Laboratory, Tucson, Ariz.*

The Present Status of the Meadowlark (*Sturnella magna*) near Portland, Maine.—In 1882, in his 'Catalogue of Birds Found in the Vicinity of Portland, Maine,' Mr. Nathan Clifford Brown stated that this bird was a rare summer resident, oftenest seen in migrations. The extreme dates then given were April 22 and Nov. 3.

To-day the conditions are decidedly different, and while the increase of which I shall speak seems to have been somewhat general in the southwest quarter of the State, I shall confine my remarks strictly to the section embraced in Mr. Brown's paper of 1882, viz., the vicinity of Portland. I had been collecting several seasons in fields in which the bird is now regularly seen in some numbers without meeting a specimen until 1891, when I found and collected a lone specimen at Westbrook. In August of the same year, in fields I had regularly visited in the adjoining town of Gorham, two small flocks, one of five, and one of eight birds, were seen. From that time to the present, May, 1909, there has been a slow but positive increase and dispersal of the birds through the section. They are not only rather plentiful in certain Westbrook and Gorham fields, but are to be found in several

places in the very outskirts of the city of Portland, and also in Falmouth and Scarborough.

The earliest date on which I have noted the bird's occurrence in spring is March 27. They have frequently shown a tendency to remain late in fall, having been recorded in November several years, in December twice, and in January once, in Westbrook. The winter just passed, 1908-09, a small flock actually wintered on the marshes back of Pine Point Beach in Scarborough, where they were watched with great interest by Mr. Walker, agent of the Pine Point R. R. station.—ARTHUR H. NORTON, *Portland, Maine.*

Another Hoary Redpoll (*Acanthis hornemanni exilipes*) **at Westbrook, Maine.**—On February 14, 1909, in a garden in the outskirts of Saccorappa village, Westbrook, I collected an adult male Hoary Redpoll. It was accompanied at the time by another bird, which I believe to have been of the same form, but this was not positively determined. Two and three birds had been visiting the place for several days previous to the capture, and I had become positive that one at least was a Hoary Redpoll, undoubtedly the one secured.—ARTHUR H. NORTON, *Portland, Maine.*

Late Records for Siskins in Chester County, Pa.—April 24, 1909. To-day I watched 7 Pine Siskins, *Spinus pinus*, for several minutes as they were feeding out on the twigs of some young apple-trees close to our lawn. They were extremely active and gentle, and confiding as usual, so that I was frequently within less than fifteen feet of some of them. I find in 'Cassinia' for 1904, Mr. Keim noted them at Bristol, Pa., 20 miles north of Philadelphia, on April 24, 1904, and in the same journal for 1902 are the following later New Jersey records, the last one being from considerably farther south than my home: At Plainfield, April 26 to May 11 (Miller); at Moorestown, April 28 to May 5 (Mickle); at Bridgeton, May 10 (Rhoads and Stone).

April 30, 1909. At noon to-day I saw 10 or 12 Siskins busily gleaning on one of the large Norway firs on our lawn. They remained till scared away by a passing trolley car.—C. J. PENNOCK, *Kennett Square, Pa.*

The Third Specimen of the Summer Tanager for Canada.—On May 7, while Messrs. J. S. Wallace and B. H. Swales were searching the end of Point Pelee for migrants, Mr. Wallace found a female summer Tanager (*Piranga rubra*) sitting quietly on a tangle of grape vines growing over some low trees. The bird was immediately shot and is now in the collection of Mr. P. A. Taverner, Detroit. Two other specimens have occurred in Ontario,—one seen near Hamilton in May, 1885 (McIlwraith, *Birds of Ontario*, p. 335), the other taken near Toronto in May, 1890, and now in the National Collection of the Geological Survey of Canada.

From the same locality I received in mid April a male Mockingbird which had been taken by Mr. Albert Gardiner. This is the second specimen of

this species that has come from Point Pelee within three years.— W. E. SAUNDERS, *London, Ontario*.

Prothonotary Warbler taken on the Coast of Maine.— A number of bird skins collected between about 1867 and 1874 by the late Levi L. Thaxter and his two sons have recently come into the possession of the Museum of Comparative Zoölogy. Among them is a beautiful adult male Prothonotary Warbler in fresh nuptial plumage. Like many of the others it is encircled by a broad, close-fitting paper band into which, no doubt, it was slipped when freshly skinned and put away to dry, according to a practise much in vogue half a century ago and one followed rather frequently, although not invariably, by the Thaxters. This band was made to serve the place of the usual tag or label, for on it is clearly inscribed in ink, and in the handwriting of Mr. Levi L. Thaxter, the following brief record:—"Matinicus Id., Me., August, 1868."

In addition to these data there is the word "Lonys" faintly written in pencil. "Lony," it seems, was a familiar nickname applied to Dr. Roland Thaxter in his early youth and sometimes used in the possessive case to designate the birds which he himself had killed. Although he has no distinct recollection of the Prothonotary Warbler his brother John, whom he has just questioned on the subject, remembers it perfectly and is certain that it was shot on Matinicus Island. It is not less reassuring than satisfactory to have so positive a statement from such a source; for when Mr. Samuel Henshaw first called my attention to the bird I could not help suspecting, and indeed, suggesting to him, that its original paper wrapper might easily have been exchanged through accident for that of some other skin of similar size, prepared in the same way. There is, I believe, but one record besides this of the occurrence of the Prothonotary Warbler in Maine. It relates to a specimen taken by the late Mr. George A. Boardman at Calais on October 30, 1862.¹ — WILLIAM BREWSTER, *Cambridge, Mass.*

The Races of the Parula Warbler.— On a short trip to Seaford, Delaware, in June, 1908, Mr. James Chapin and the writer found the Parula Warbler an abundant bird along the Nanticoke River. The subspecific identity of the breeding bird of Delaware has heretofore been uncertain, Ridgway stating that the southern form, true *Compsothlypis americana*, probably reached the State. To settle this question, five males and one female were collected. The males are all fully adult birds, none being in the immature first nuptial plumage. They prove conclusively that the Delaware bird belongs to the northern form, *usneæ*. The size and proportions of wings and bill agree nearly with *usneæ*, while the coloration, though perhaps not typical, is nearer this race. Three of the specimens have a blackish jugular band, while the two others have no trace of it. In this species, however, the total absence of blackish seems to be an individual peculiarity and as

¹ Verrill, Proc. Boston Soc. Nat. Hist., IX, 1863, p. 234.

frequent in the northern as in the southern form. Such birds, judging by their remiges and wing-coverts, are not necessarily immature birds but may be fully adult.

Ridgway states (Bds. N. and M. Amer.) that a considerable number of specimens from the range of *usneæ* (Massachusetts, New York, etc.) are indistinguishable from true *americana*. As far as the color goes this is doubtless due to individual variation, but the writer believes that the northern specimens agreeing with *americana* in proportions are almost always immature birds in the first nuptial plumage. In such specimens, as in most other Warblers, the wing averages slightly shorter than in fully adult birds, and as the bill is as large as in the adult, the relative lengths of these parts thus resemble those of the southern race. If *adults* only of the two races are compared the differences in measurements and proportions are found to be more constant.

There seems to be a slight average difference in coloration between *usneæ* of the Atlantic States and the Mississippi Valley bird, which has been separated as *ramalina*. The latter usually has the jugular band more conspicuous and of a deeper black. The characters that separate these two races are so slight, however, that the decision of the A. O. U. Committee in rejecting *ramalina* is doubtless a wise one. There is no difference in proportions between the latter and *usneæ* nor so pronounced a difference in color.

The following table shows the average measurements of males, in millimeters, according to locality and age.

		Wing	Tail	Bill from nostril
Florida and southern Georgia	4 im.	56.2	41.3	7.8
	6 ad.	57.8	42.5	7.6
Delaware	5 ad.	60.4	44.9	7.1
Northern New Jersey to Massachusetts	9 im.	59.2	43.	7.3
	8 ad.	61.4	43.8	7.2
Texas	3 im.	55.1	41.2	7.
	5 ad.	58.6	42.5	7.2
Michigan and Minnesota	2 im.	57.8	41.6	7.
	3 ad.	60.1	42.6	6.9

W. DEW. MILLER, *Amer. Mus. Nat. Hist., New York City.*

Breeding of the Louisiana Water-Thrush (*Seiurus motacilla*) in Berkshire County, Massachusetts.—On the afternoon of June 28, 1902, I was following up the course of a brook in Glendale, Berkshire County, Massachusetts, in company with my old friend and schoolmate, Daniel Chester French, when we came to a secluded, shallow pond, less than a quarter of an acre in extent, lying between two wooded ridges of moderate elevation. It was made, a number of years ago, for the purpose of obtaining ice, by a farmer living in the neighborhood who built a rude dam across the brook at a point where, after winding sluggishly through what was then a grassy

meadow, it raced down a rather steep incline between well defined banks overgrown with mountain laurel and densely shaded by trees of various kinds. As we approached the pond we heard a Water-Thrush chirping sharply. A moment later it appeared at the edge of a thicket with something in its bill which looked like a large grub but which did not prevent it from continuing to utter its metallic note, at short, regular intervals. It was soon joined by its mate, the male, I thought. He, also, chirped but less anxiously and frequently than the other. Both birds now began flitting close about us, enabling us to make sure that they were Louisiana, and not Northern, Water-Thrushes. They came, indeed, so very near and into lights so favorable for revealing their characteristic color and markings that we were left in no doubt whatever as to their identity. After watching them for several minutes we advanced and almost immediately discovered their nest, which was within twenty feet of where we first saw them. It contained six young, well feathered and almost large enough to fly although they kept their eyes tight shut while we were looking at them, perhaps in the hope that by so doing they might escape notice. They crowded the nest to its utmost capacity and the coloring of their upper parts — a rich, deep, seal brown — closely matched that of the mud-soaked leaves which formed its outer surface. It was the largest nest of a Water-Thrush that I have ever examined. The crown of a man's hat would not have held half its total bulk. Its situation, also, was somewhat unusual for it was placed on the side of a shallow pit which had been dug at the base of a bank to obtain earth for the construction of the dam. The rear wall of this excavation was vertical — or even overhanging — at the top at several points, but the birds had selected a place where it merely sloped steeply downward and outward and had here built their nest on a slight projection or knob scarce a foot above the level ground beneath, and wholly unsheltered above, either from observation or from the weather. I did not return to the spot that summer but I have since revisited it almost every year, about the same season, without obtaining evidence, however, that the birds have again nested there or, indeed, anywhere in the immediate neighborhood.

Mr. Walter Faxon, to whom I mentioned the above described experience not long after it had occurred, wrote me on October 14, 1902, as follows: "If you record the Southern Water-Thrush's nest (as I hope you will) you might take the occasion also to mention that I found a male [of this species] still in song on the 8th of June, 1901, at Richmond Pond, on the line between the townships of Richmond and Pittsfield." Doubtless this bird is distributed well over the southern half of Berkshire County.— WILLIAM BREWSTER, Cambridge, Mass.

Concerning *Thryomanes bewicki cryptus* in Colorado.— Merritt Cary, in 'The Auk' for April, 1909, p. 185, records *Thryomanes bewicki cryptus* from Shell Rock Cañon, in the northwest corner of Baca County, although the specimen was not secured, and was merely supposed to belong to this form,

rather than to *bairdi*, which has long been known from the State. The last week in April, 1909, I secured two specimens of wrens at Irwin's Ranch, Las Animas County, about twelve miles due west of Shell Rock Cañon, and exactly the same sort of country (rocks, cedars, and piñons), which have been compared by Mr. W. L. Sclater with specimens in the Colorado College Collection, and he informs me they are undoubtedly *bairdi*. This being the case, it seems more than likely that the bird seen by Cary was also *bairdi*, and that *cryptus* should be eliminated from the Colorado list until more positive evidence is obtained.—EDWARD R. WARREN, *Colorado Springs, Colo.*

A Correction.—In my paper on Colorado birds in 'The Auk' for April, 1909 (p. 184), *Thryomanes bewickii cryptus* was definitely listed as a new record for the State, on the strength of a field identification made in Baca County. Through an unaccountable oversight the form *cryptus* was not queried, and hence the record appeared as definite, instead of tentative. Since Mr. H. C. Oberholser now considers all of the western Texas Bewick wrens to be *eremophilus* (= "*bairdi*"), the record should stand as *Thryomanes bewickii eremophilus*.¹

In the same paper a specimen of *Catherpes* from Baca County was listed as *C. m. conspersus*. Upon examination Mr. Oberholser calls this specimen *C. m. polioptilus*.¹ The statement made that Gaume's Ranch, Baca County, is the most eastern locality for Colorado is erroneous, since Mr. E. R. Warren² has already recorded the Cañon Wren from Cheyenne Wells, near the Kansas line.

The above errors were due to the writer's absence from Washington in the field.—MERRITT CARY, *U. S. Biological Survey, Washington, D. C.*

Bicknell's Thrush (*Hylocichla aliciae bicknelli*) in **Cumberland County, Maine.**—Having recently had occasion to examine some Gray-cheeked Thrushes, all of the specimens contained in the collections of the Portland Society of Natural History and of the writer were brought together. This revealed the fact that a specimen in the Natural History Society's collection is a Bicknell's Thrush. It is a young female, taken in Cumberland County, Maine, September 30, 1878. Although the specimen is so characteristic that no doubt existed as to its identity, it was submitted to Dr. Charles W. Richmond for verification.

There appears to be no previous record of a specimen taken in Maine, yet it has been reported, in each instance without capture of a specimen, from the following localities: Franklin, 1906 (D. W. Sweet, *Journ. Orn. Soc.*, VII, p. 81); Oxford, 1899 (A. P. Larrabee, verbal); Piscataquis, 1898 (F. H. Allen, *Auk*, XV, p. 60).—ARTHUR H. NORTON, *Portland, Me.*

[¹The proper name of this form is *bairdi* (*cf.* *Auk*, XXV, July, 1908, p. 385). Neither "*eremophilus*" nor "*polioptilus*" are recognized in the A. O. U. Check-List (*cf.* *Auk*, t. c., p. 397).—EDD.]

²Condor, IX, 1907, p. 111.

The Rank of Certain Groups of Birds.—The following changes in the rank of certain groups in the A. O. U. Check-List seem desirable in order to make those of the same grade of more equal value.

The Cuculi (including the Cuculidæ and the African Musophagidæ), and the Striges should both be raised to full orders. The former are, by all recent authorities, given higher rank than is accorded them in the Check-List. They possess certain characters separating them from all the other Picarian birds (the Trogones, Alcyones, Pici and Macrochires of the List and other extralimital groups) and allying them with the Gallinaceous birds and the Parrots. As to the Striges there now seems little doubt that they are not really related to the diurnal birds of prey but are nearer the Goatsuckers. However this may be, the Owls are so different from the Hawks and Vultures that they should be ordinally separated.

The subfamilies Fulmarinæ and Puffininæ should be united in a family Puffinidæ, as is done in the British Museum Catalogue by Salvin, who gives several excellent characters to distinguish them from the other Tubinares. The Oceanitinæ, comprising the long-legged Petrels, are characterized by eight or ten good anatomical characters, and also merit family rank. These two groups are at present given the same grade in the List as the Gallinulinæ and the Sterninæ, but are undoubtedly of much higher value. In fact they are better marked than several of the families now recognized, as the Odontophoridæ, Meleagridæ, Tetraonidæ, and certain Limicoline groups, and probably also the Buteonidæ, Plataleidæ, Rynchopidæ and others. The fact that all the essential characters of the Puffinidæ and several of those of the Oceanitidæ are internal, is doubtless the reason why their recognition as families is not more general.

With the Falconidæ restricted to the true Falcons, the Caracaras, and their few near allies, it is now desirable to recognize a subfamily Polyborinæ to include *Polyborus* and the extralimital genera *Ibycter* and *Milvago*.

In the Check-List the Aramidæ are included in the suborder Ralli. In all internal characters and in pterylosis, however, *Aramus* is strictly Gruine and should be placed nearer the cranes as is done by Gadow, Sharpe, and other authorities.—W. DEW. MILLER, *Amer. Mus. Nat. Hist., New York City*.

Three Records for British Columbia.—*Aluco pratincola*. BARN OWL. Messrs. Jose and Faulks, taxidermists, of Vancouver, recently showed me a fine female Barn Owl, shot by a Mr. McKenzie at Ladner's landing, not far from the mouth of the Fraser River. The cere and feet were still soft, as the specimen had just been mounted; the date of capture would be about 7th April, 1909. It was a female with the ovaries much enlarged.

Strix occidentalis caurinum. NORTHWESTERN SPOTTED OWL.—On the 26th January of this year I shot a fine female of this owl at Chilliwack, B. C., the first I have seen in the flesh in over twenty years' collecting in this Province. It was killed during a cold snap of exceptional severity.

Catherpes mexicanus conspersus. CAÑON WREN.—Last spring Mr. C. deB. Green of Fairview, B. C., was convinced that the Cañon Wren was a scarce though regular breeder in the extreme southern portion of the Okanagan Valley in the semi-arid interior. He was unable at that time to place the identification beyond a doubt by the capture of a specimen. I have just received from him a rough skin of a male taken the third week in March of this year at McIntyre Creek, a mountain stream which flows into Okanagan River from the east, some twenty miles north of the International Boundary. It was one of a pair that were evidently nesting at that early date, so the species will probably prove to be a permanent resident in that district. Mr. Green has since located another breeding pair near the north end of Osoyoos Lake.—ALLAN BROOKS, *Okanagan Landing, B. C.*

Some New Birds for Colorado.—Since unavoidable circumstances have prevented the publication in this issue of 'The Auk' of a lengthy article on Colorado birds, it seems best to present here a short note on the occurrence of four species hitherto unrecorded for the State.

Sterna hirundo. COMMON TERN. One was noted May 14, 1908, at New Windsor by Geo. E. Osterhout. The specimen was sent to the Biological Survey for identification.

Butorides virescens. GREEN HERON. One at Loveland, July 23, 1895, by Edward A. Preble of the Biological Survey.

Spizella pusilla arenacea. WESTERN FIELD SPARROW. One at Yuma, May 9–11, 1908, by Miss Jennie M. Patten, who for the past six years has been reporting bird movements to the Biological Survey.

Helminthophila chrysoptera. GOLDEN-WINGED WARBLER. One May 25, 1906, at Yuma, by Miss Patten.—WELLS W. COOKE, *Biological Survey, Washington, D. C.*

Notes concerning Certain Birds of Long Island, New York.—A few data concerning the occurrence of certain of the less commonly observed birds of Long Island and of facts regarding the time during which others, less rare, extend their stay within our limits, are herewith presented. Most of them have been kindly furnished me by other observers.

Porzana carolina. SORA. A specimen of this rail was obtained by Mr. Robert L. Peavey, of Brooklyn, at Seaford on the unusually late date of December 24 (1908). This date is two months later than the previously ascertained limit of its occurrence here in autumn, as given in 'A List of the Birds of Long Island, New York.'

Coturnicops noveboracensis. YELLOW RAIL.—Three additional occurrences of this bird for Long Island have been made available through Mr. Robert L. Peavey. All were secured recently, two during the later months of 1908, one in January, 1909. One of the specimens, taken by Mr. Peavey and by him presented to the Museum of the Brooklyn Institute of Arts and Sciences, has been already recorded by Mr. George K. Cherrie, curator

of ornithology of the Museum. Mr. Cherrie says: "This specimen was collected by the donor at Seaford, Long Island, September, 1908" (Museum News, Vol. IV, March, p. 85, 1909). I learn from Mr. Peavey that it was taken on the bay side of the beach, back of the sand dunes, where the "sedge" grass grew in tufts. In one of these the bird was concealed, and was only flushed on a near approach, so that care had to be exercised in collecting it so that it should not be rendered unfit for preserving as a specimen. It was taken Sept. 20, 1908, and is a male.

A second specimen, also a male, was taken by him at the same place on December 4, 1908. This one was found on the edge of the main creek, in the short salt-meadow grass. A third specimen was obtained on January 10, 1909, at the same place, in a similar location. This specimen, through the generosity of Mr. Peavey, is now in the writer's collection of skins.

Cathartes aura. TURKEY VULTURE. A very fine male specimen of this vulture has been added to my collection through the generosity of Mr. Roy Latham of Orient Point. Mr. Latham briefly stated the facts of its occurrence in his record of the species of birds observed by him at Orient Point on Dec. 22, 1907, which was published in the 'Bird-Lore' Christmas bird-census (Vol. X, 1908, p. 29). Mr. Latham informed me that the bird was unable to fly when first discovered by him on the beach. It was at once evident that it was disabled, and it was found that it had some foreign substance in its throat. This had, no doubt, prevented it from eating for so long a time that it had become too weak to fly. The cause of the obstruction in the throat was found to be a bone of an animal of considerable size. Mr. Latham extracted the bone and removed the bird to his home, where it was cared for and protected. He fed the bird, and found that it ate greedily of stale fish. Despite his care, however, it did not survive the following night.

Catharista urubu. BLACK VULTURE.—I am indebted to Mr. C. W. Crandall of Woodside for the report of the capture of a specimen of this bird which so rarely reaches us from more southern regions that this may perhaps be regarded as the first specimen authenticated beyond a doubt, or, at least, backed by an authenticated skin, taken within the actual geographical limits of Long Island. As stated in 'A List of the Birds of Long Island,' p. 67, the evidence entitling it to a place in the avifauna of Long Island rests on the authority of Mr. Robert Lawrence who observed it on the adjacent shore of Sandy Hook, and of Mr. deL. Berier, who reported one found dead at Coney Island beach, by Mr. Akhurst. As no authenticated skin of this specimen is extant, that of Mr. Crandall's is all the more valuable. Mr. Crandall was at Plum Island, L. I., on May 19 and 20, 1895, and on exactly or nearly the same dates on the three subsequent years, in the interests of ornithological investigation. It was on the second trip, namely, 1896, on the 19th or 20th of May, or within a day or two of these dates, that the bird was shot. He was in the field, bird-nesting, when, hearing a distant gun-shot he was attracted to investigate the cause. He found that the shot had been fired by a farmer, at a large bird which had

been feeding on a dead sheep. The farmer — a Mr. Clark — finding that there clung to the bird an odor not incompatible with its feeding habits, had consigned his prize to the furrow where the plowshare would shortly have buried it. From this position Mr. Crandall, with prompt and commendable collecting zeal, rescued the specimen and sent it to a New York taxidermist (Murgatroyd) for mounting. Mr. Crandall still has the mounted skin in his possession, and, at his home, the writer recently had the pleasure of examining it.

Nyctea nyctea. SNOWY OWL. Mr. Peavey has kindly informed me, and has permitted me to record the fact, that he took a very white specimen of this species on the shore of Flatlands Bay on Feb. 19, 1909. This is a rather later date of occurrence of this species than any previous ones which I have.

Acanthis linaria. REDPOLL. It may be worthy of note that Redpolls occurred again on Long Island this winter, although, apparently, less abundantly than last. Though several were seen by others, but a single individual came under my direct observation. It was seen feeding on the ground, among a number of Pine Siskins in Prospect Park on Jan. 30, 1909.

Dendroica palmarum. PALM WARBLER. A specimen of this warbler was taken by the writer on Rockaway Beach, Sept. 26, 1908. It was found among the sand dunes on the bay side of the beach on the date mentioned, where numbers of Savannah and other sparrows were also found. Like them it seemed much at home in this open, unsheltered locality. Here the sand is but scantily covered, the sea-side golden-rod at this season being the most conspicuous of the sea-side flora. Thompson, in his 'Birds of Manitoba,' mentions finding this bird, during migrations, far from any wooded land, and Chapman refers to the avoidance of trees by the eastern subspecies, *hypochrysea*, in his 'Birds of Eastern North America.' Since the autumn of 1895, when it was met with repeatedly, as stated in 'The Auk' (XIX, 1902, p. 148), it has not been again met with until this autumn (of 1908).— WILLIAM C. BRAISLIN, *Brooklyn, N. Y.*

RECENT LITERATURE.

Jubilee Meeting of the British Ornithologists' Union.—The Fiftieth Anniversary of the founding of the British Ornithologists' Union was celebrated on Wednesday, December 9, 1908, at the house of the Zoölogical Society of London, 3 Hanover Square, with appropriate addresses and the presentation of medals to the surviving Founders, followed by a dinner in the evening at the Trocadero Restaurant, attended by 81 members and 24 guests. At the meeting letters and telegrams were read from the South African Ornithologists' Union, the Ornithologische Gesellschaft in Bayern, from a number of Foreign Members, and an address from the Deutsche Ornithologische Gesellschaft.

An address by the President, Dr. F. Du Cane Godman, summarized briefly the work of the B. O. U. and its members, and the wonderful recent progress of ornithology. It was noted that in 1864, when the first volume of the 'Zoölogical Record' was published, only "120 papers on ornithology were enumerated for the previous year, while on turning to that for 1907 there were no less than 1760, or fifteen times as many as there were thirty-three [forty-three] years earlier." He also stated that in 1872 there were only about 30,000 stuffed birds and bird-skins in the British Museum, while now there are 500,000, or sixteen times as many as in 1872. "These two instances," he added, "will give some idea of the progress ornithology has made since the foundation of the British Ornithologists' Union." He also referred to the leading contemporary journals of ornithology, as the 'Journal für Ornithologie,' begun by the German Ornithological Society six years before 'The Ibis'; and adding: "Perhaps the Society next in importance is the American Ornithologists' Union, with its quarterly Journal 'The Auk,' a most valuable work chiefly devoted to the birds of its own Continent."

The President's address was followed by the reading of a "short history of the Union" by Dr. P. L. Slater, and some details of the 'Biographical Notices' were given by Mr. A. H. Evans. These include sketches, mostly short, of the twenty Founders, the principal contributors to the first series of 'The Ibis,' and of the present officials of the Union, with portraits of each. Then followed the presentation of medals to the four surviving original members of the Union, namely, Dr. F. Du Cane Godman, Dr. P. L. Slater, Mr. W. H. Hudleston, and Mr. Percy Godman.

The 'Proceedings' of this memorable celebration have now been issued as a special 'Jubilee Supplement' to 'The Ibis,' forming a volume of 272 pages, illustrated with 40 portraits. This fascinating record consists: (1) Proceedings (pp. 1-18); (2) A Short History of the British Ornithologists' Union (pp. 19-69); (3) Biographical Notices of the Original Members, the

¹ Ninth Series, Vol. II, 1909. Published March, 1909, pp. iv + 268, and 40 pl. (portraits).

principal contributors to the first series of 'The Ibis' (1859-1864). and the present officers (pp. 71-232); (4) List of Members (pp. 233-268).

Dr. Sclater's history of the founding of the Union recounts the first steps taken in the formation of this great agent in the promotion of ornithological research during the half century now just ended. The account of the inaugural meeting, held in the rooms of the late Professor Alfred Newton at Magdalene College, Cambridge, November 17, 1858, is less full than could be desired, no formal record of it having been found. It apparently comprised eight ornithologists, who decided upon a list¹ of twenty persons who were to be invited to become founders. Two resolutions were adopted, which were to the effect that an Ornithologists' Union of twenty members should be formed, "with the principal object of establishing a new Journal entirely devoted to Birds"; and that Lieut-Col. H. M. Drummond should be the President, Professor Newton the Secretary, and Dr. Sclater the Editor of the proposed Journal. Steps were immediately taken by the Editor to secure a publisher, and the first number was ready for the press about the middle of January, 1859. Then follows a history of 'The Ibis,' volume by volume, for the next fifty years, giving briefly the principal events in its history and in that of the Union, from which we learn that the first general meeting of the B. O. U. was held in London on November 9, 1859; but the minutes of this meeting, like many other early papers relating to its organization, "have not been found." At the annual meeting held in 1860 it was voted to elect ten Honorary Members from "ornithologists not residing in the United Kingdom," among whom were Professor S. F. Baird of Washington and John Cassin of Philadelphia. The only other Americans on whom this honor has been conferred are Robert Ridgway, elected to this class in 1903, and the Editor of 'The Auk,' in 1907. In 1872 a new class, designated as Foreign Members, was instituted, to which fifteen distinguished foreign ornithologists were elected, among whom were two from America—Coues and Lawrence. In later years were added Ridgway in 1880, Marsh in 1883, Allen in 1890, Stejneger in 1900, Chapman in 1902, Oberholser in 1905, and Richmond in 1908.

The 'List of Members' includes the names of all who have been elected to the different classes of membership since the organization of the Union, this roll numbering 719, of which the roster at the close of 1908 carried only 473, a large number having died in the half century of the Union's existence. Of the 650 elected to the class of Ordinary Members, only 343 were in good standing in 1908, deaths, resignations, and delinquency in payment of dues accounting for the large reduction in the half-century total. Of the 3 elected as Extraordinary Members, 2 remain; of 21 elected as Honorary Members (limited to 10) 11 have passed on; the class of Colonial Members, instituted in 1903 and limited to 10, numbers 8, with 1 deceased; the list of Foreign Members (limited to 20) contains 19; of the 36 who have received this honor 17 have died.

¹ A facsimile of this list, in the handwriting of Newton, with additions in the handwriting of Sclater, is here given (plate facing p. 21).

While the membership roll, giving as it does the date of election, the date of death of deceased members, the date of resignations, etc., has the strong element of personal interest that always attaches to such a record, the biographies and portraits have permanent value as a concise history of a large number of the leading British ornithologists, many of whom have finished their work and left an enviable record.

The Jubilee Meeting of the British Ornithologists' Union is further noteworthy as the occasion of the initiation of a plan proposed by Mr. Ogilvie-Grant for the exploration of the Charles Louis Mountains in Dutch New Guinea, which are believed to rise to an altitude of from 16,500 to 17,500 feet, and to constitute at the present time "beyond doubt the finest unknown ground in the world." It is Mr. Grant's desire to associate this undertaking with the British Ornithologists' Union, "so that it may be known as the 'British Ornithologists' Union Jubilee Exploration of the Charles Louis Mountains'." The proposition, when put to vote, received unanimous approval, and a Committee was appointed to coöperate with Mr. Grant in securing the necessary funds for the enterprise.—J. A. A.

Thayer and Bangs on the Birds of Guadaloupe Island.¹—Guadaloupe Island is situated off the coast of Lower California, about 220 miles southwest of San Diego. Practically nothing was known of its fauna till 1875, when it was visited by the well-known collector Dr. Edward Palmer. He obtained eight species of land birds, represented by 72 specimens. On investigation of this material Mr. Ridgway² found that while each species had a near relative on the mainland, the Guadaloupe forms were so far differentiated from them in each case as to warrant their recognition as distinct species. These differences consisted in the increased size of the bill and feet, shorter wings and tail, and darker colors in the island forms, due to insular environment. The island has since been repeatedly visited by ornithologists, including W. E. Bryant³ in 1885, who increased the number of species known from the island from 9 to 36, all land birds except 4, but adding none to the 8 previously described as peculiar to the island. Mr. Bryant, however, gave for the first time a detailed account of the topography, climate, and vegetation.

In the spring of 1906, Mr. W. W. Brown, Jr., with two assistants, visited the island in the interest of Messrs. Thayer and Bangs, and the present paper gives the results of Mr. Brown's work. Reference is made to the

¹ The present state of the Ornis of Guadaloupe Island. By John E. Thayer and Outram Bangs. *Condor*, Vol. X, No. 3, May-June, 1908, pp. 101-106.

² Ornithology of Guadaloupe Island. By Robert Ridgway. *Bull. U. S. Geol. and Geogr. Surv. Terr.*, Vol. II, No. 2, April, 1876, pp. 183-195.

The Birds of Guadaloupe Island, discussed with reference to the Present Genesis of the Species. By Robert Ridgway. *Bull. Nutt. Orn. Club*, Vol. II, No. 3, July, 1877, pp. 58-66.

³ Additions to the Ornithology of Guadaloupe Island. By Walter E. Bryant. *Bull. California Acad. Sci.*, No. 6, pp. 269-318, Jan., 1887.

"alarming rapidity of the destruction" of the original biota of the island that is taking place, "due to the introduction of goats and cats. Already," it is stated, "many plants and three birds are gone and others are reduced to very small numbers, and the whole island seems threatened in the near future with absolute desolation — doomed to become a barren rock." The three birds that have already become extinct are the Caracara (*Polyborus lutosus*), a Wren (*Thryomanes brevicauda*), and a Towhee (*Pipilo consobrinus*). While the island is uninhabited at present by man, it is overrun by "between six and eight thousand" goats; cats are also numerous, and the house mouse (*Mus musculus*) has become well established. In the present paper 17 species are recorded as taken, several of them in large series, and two others as seen by Mr. Brown and his assistants. The list is copiously annotated with field notes made by the collectors, who were on the island from May 1 to June 28, but too late for the breeding season of most of the species. The Burrowing Owl (*Speotyto cunicularia becki* Rothschild and Hartert, based originally on a single specimen), of which 27 specimens were taken, is said to be "absolutely indistinguishable in any way" from the mainland form. While this is not quite true, the under wing covers being marked more or less with dusky streaks, instead of being unmarked as in the mainland form, the difference is thought by the A. O. U. Committee to be too slight to warrant the recognition of the island form as even a subspecies.— J. A. A.

Bangs on Birds from Western Colombia.¹— The basis of these 'Notes' is a small collection made in northwestern Colombia, just south of Darien, by Mervyn G. Palmer, a region hitherto ornithologically little known. "Although it contained but 110 species and subspecies, it is rich in rare and new forms," and should subsequent installments from Mr. Palmer prove of equal interest a list will be published of the birds of the region. In the present paper 5 forms that appear to be new are described and notes are given on a few other species.

In another paper of the same date² Mr. Bangs separates the Colombian form of *Rhynchocyclus sulphurescens* as *R. s. exortivus* subsp. nov.— J. A. A.

Bangs on Costa Rican Birds.³— The present paper includes notices of 35 species and subspecies, two of the latter being described as new. Most of the forms are rare, and the relationships of some others are considered. Thus the author's *Scotothorus verapacis dumicola* proves to have been founded on "differences due to individual variations." The known range of several of the forms mentioned is here extended. The paper is based

¹ Notes on Birds from Western Colombia. By Outram Bangs. Proc. Biol. Soc. Washington, XXI, pp. 157-162. July 27, 1908.

² A New Tyrant-Bird from the Santa Marta Region of Colombia. By Outram Bangs. *Ibid.*, p. 163.

³ Notes on Some Rare or not well-known Costa Rican Birds. By Outram Bangs. Proc. Biol. Soc. Washington, Vol. XXII, pp. 29-38, March 10, 1909.

on collections made for the author by Mr. C. F. Underwood from December, 1907, to June, 1908.—J. A. A.

Ridgway on New Genera, Species, and Subspecies of Tropical American Birds.¹—Of the 16 new genera here described, 9 belong to the family Formicariidæ and 7 to the family Furnariidæ; the 3 new species and 8 new subspecies, belong to the families Funariidæ and Dendrocolaptidæ. In a foot-note (p. 74) the genus *Myrmelastes* is considered as inseparable from *Myrmeciza*, and *Myrmelastes lawrencii* Salv. and Godm. is stated to be the immature male of *Gymnocichla cheiroleuca*, and *M. corvinus* Lawr. (= *M. ceterus* Bangs) to be the same as *G. nudipes*.—J. A. A.

New North American Birds.—Mr. E. W. Nelson² has described a new thrush from Tamaulipas, Mexico, as *Catharus mexicanus smithi*, it differing from *mexicanus* in having shorter wings and tail and longer tarsi, and also slightly in coloration.

Messrs. Thayer and Bangs have recently described³ a new form of the Snowy Egret from San José Island, Gulf of California, about sixty miles north of La Paz, as *Egretta candidissima brewsteri*, on the basis of its large size, especially evident in "the enormously heavy legs."

Mr. Joseph Grinnell has proposed the addition of "three new Song Sparrows"⁴ from California. One of them is from "the extensive marshes at the confluence of the Sacramento and San Joaquin Rivers," and while resembling *Melospiza melodia gouldi* Baird (= *M. m. samuelis* Baird) in coloration, it is larger with a heavier bill, which is markedly more swollen at the base, and is hence named *M. m. maxilaris*. The second is the *M. m. gouldii* Baird, revived, which has of late been referred to *M. m. samuelis* as a synonym. A recent reëxamination of a large amount of material by the A. O. U. Committee on Nomenclature, including specimens furnished by Mr. Grinnell, has failed to convince the Committee of the propriety of its recognition (see *antea*, p. 301). The third is from the vicinity of the Salton Sea and suitable localities along the Lower Colorado River, and is named *M. m. saltonis*. This form is considered by the same Committee (see *antea*, p. 301) as not separable from *M. m. fallax*, as commonly recognized—in other words, that *saltonis* is the Desert Song Sparrow of the arid Southwest. The type of *fallax*, unfortunately, proves not to be quite typical as to locality, being a winter specimen and a migrant, but *fallax*

¹ New Genera, Species and Subspecies of Formicariidæ, Furnariidæ, and Dendrocolaptidæ. By Robert Ridgway. Proc. Biol. Soc. Washington, Vol. XXII, pp. 69-74, April 17, 1909.

² A New Thrush from Mexico. By E. W. Nelson. Proc. Biol. Soc. Washington, Vol. XXII, pp. 49, 50. April 17, 1909.

³ Description of a New Subspecies of the Snowy Heron. By John E. Thayer and Outram Bangs. Proc. New Engl. Zool. Club, Vol. IV, pp. 39-41. April 29, 1909.

⁴ Three New Song Sparrows from California. By Joseph Grinnell. University of California Publications in Zoölogy, Vol. V, No. 3, pp. 265-269. April 9, 1909.

has nevertheless been accepted as the name of the form of which *saltonis* may perhaps be regarded as the extreme manifestation. In the opinion of the A. O. U. Committee there is not room nor good reason for admitting two forms of the pallid phase of the Song Sparrow. It unfortunately happens that this is another of the many cases where the type of a form is unsatisfactory, being more or less intermediate between two forms which are sufficiently differentiated in their respective areas of full development. To make such an unfortunate circumstance the basis or excuse for another 'split' seems hardly the wisest way to deal with such cases.— J. A. A.

Widmann on 'The Summer Birds of Shaw's Garden.'— Shaw's Garden,¹ or the Missouri Botanical Garden, at St. Louis, Mo., is the summer home of forty species of birds, while six others are here recorded as "more or less regular visitors from nearby breeding grounds." It is believed that several others would nest within the Garden if suitable nesting-boxes were provided for them, and suggestions are made for their arrangement in a way to render them undesirable to the House Sparrows.

Of many species of European songbirds introduced into St. Louis about 1870, only two seem to have secured a permanent foothold. These are the House Sparrow and the European Tree Sparrow. The former soon became abundant at St. Louis, as elsewhere; the latter has been able to maintain its foothold in various parts of the city, Shaw's Garden having "always been, and still is, one of the few places where the Tree Sparrow has found refuge and succeeds in rearing a few broods." The difference between the two species, in habits and temperament as well as in size and markings, are pointed out, and further emphasized by an excellent colored plate representing both species. The Tree Sparrow has suffered from the tyranny and persecution of its larger, more pugnacious and more prolific fellow-countryman, the House Sparrow, a plea for the repression of which and for the encouragement of the Tree Sparrow is here made. St. Louis and vicinity, says Mr. Widmann, is the only place in America where the Tree Sparrow occurs.

In his pleasant comment on the status and traits of the various species of summer birds in the Garden, he states that "the number of Blue Jays and Bronzed Grackles should always be kept limited to a very few pairs during the breeding time," owing to their depredations upon the eggs and nestlings of the smaller birds.— J. A. A.

Cole on 'The Crow as a Menace to Poultry Raising.'²— The economic relation of the Crow to agriculture is still an unsettled question, not so much in reference to its direct attacks upon farm crops and poultry, which are

¹ Summer Birds of Shaw's Garden. By Otto Widmann. 20th Ann. Rep. Missouri Botanical Garden, pp. 41-80, pl. i, colored.

² The Crow a Menace to Poultry Raising. By Leon J. Cole. 21st Ann. Rep. Rhode Island Agric. Experiment Station, pp. 312-316, January, 1909.

rarely serious, as to its destruction of the eggs and young of other birds. Its depredations upon poultry are local and sporadic, and doubtless limited to a small proportion of the crow population of a given district. In the present paper Dr. Cole recites several well authenticated instances of considerable loss to poultry raisers from the fondness of crows for young chickens and ducklings. The author favors the non-protection of the crow by State laws, but believes it would be unwise to offer a bounty for their destruction. The crow has its good points as a destroyer of injurious insects, but in view of his general character as a nest-robber and chicken-thief, and his propensity for pulling up the farmer's young corn, it is doubtful whether his good deeds outweigh his many evil propensities.—J. A. A.

Swarth on the Distribution and Molt of Mearns's Quail.¹—Following a short account of the habits and distribution (illustrated with a map) of this quail (*Cyrtonyx montezumæ mearnsi*) Mr. Swarth gives a detailed account of the change from the juvenal to the first winter plumage, with illustrations of the various stages, from photographs, showing the ventral surface in thirteen specimens. Each stage of the change is described, and attention is called, apparently for the first time, to the sexual differences observable in the juvenal plumage.—J. A. A.

Godman's 'Monograph of the Petrels.'²—Part IV,² dated April, 1909, completes the genus *Æstrelata*, and contains in addition the genera *Pagodroma*, *Bulweria*, *Macronectes*, *Fulmarus*, *Daption*, *Halobena*, and three of the four 'species' of *Prion*. From the known intergradation of the four forms of *Prion* (l. c., p. 286), three of them are evidently not properly entitled to the rank of species, and their interrelationships would be better expressed by the use of trinomials. *Bulweria macgillivrayi* is known only from a single specimen, as is also *Æstrelata fisheri*, and there are only two known examples of *Æ. heraldica*.

As in previous parts, we have here a most satisfactory summary of the history, characteristics, and relationships of these, for the most part, little known pelagic birds.—J. A. A.

Howard's 'The British Warblers,' Part III.—Part III³ of this remarkable monograph merits fully the liberal praise we bestowed upon Parts I and II

¹ Distribution and Molt of the Mearns Quail. By H. S. Swarth. Condor, Vol. XI, No. 2, March-April, 1909, pp. 39-43, 1 pl. and 3 text figg.

² Part IV, pp. 223-296, pll. lxxix-xcix. April, 1909. For notices of previous parts see Auk, XXV, 1908, pp. 244, 338; XXVI, p. 95.

³ The British Warblers: A History with Problems of their Lives. By H. Eliot Howard, F. Z. S., M. B. O. U. Illustrated by Henrik Grönvold, London: R. H. Porter, 7 Princess Street, Cavendish Square, W. Part 3, February, 1909. Price, 21s. net.

Blackcap, pp. 1-30, 1 colored plate of male and female, 8 photogravure plates of male in various attitudes; Pallas's Warbler, 2 pp., 1 col. pl.; Radde's Bush-Warbler, 2 pp., 1 col. pl.; Chiff-chaff, 1 photogr. pl. of female; 4 maps, showing summer and winter distribution of the Blackcap and Garden Warbler.

(Auk, XXV, 1908, pp. 339, 340). The greater part of the present issue is devoted to the Blackcap (*Sylvia atricapilla*), to which are devoted 36 pages of the text, a colored plate of male and female, 8 full-page photogravures, depicting the male in various attitudes, and maps showing its summer and winter distribution. A colored plate and two pages of text are given respectively to Pallas's Warbler and Radde's Bush-Warbler, for each of which there is apparently only a single British record. There is also a photogravure of the female of the Chiff-chaff, and two maps showing the summer and winter distribution of the Garden Warbler. The method of treatment and the general character of the work have already been described in our notice of Parts I and II, to which the character of the present part strictly conforms.

The opening paragraph of the 'Life History' of the Blackcap states: "There are many facts in the life of this bird which are good examples of the contradictory nature of the evidence a naturalist often has to face, and this makes the character of the species an unusually interesting one." And we find some thirty pages are given to an elucidation of its traits during its summer sojourn in the British Islands — from the first arrival of the males in spring till the departure of the species in autumn. Special attention is given to the activities of the male, so noteworthy for its powers of song, its energy, excitability, and "bodily and vocal antics." In discussing the part played by the vocal powers of the male in courtship, he again (see Parts I and II) reverts to the theory of sexual selection, for which his observations fail to give convincing support. He says: "Until the females arrive the males usually sing their true song, but occasionally, especially when excited, imitate other species. Upon the arrival of the females a change takes place, and excitement is at its highest point, with the result that the true song is so far forgotten that, especially during that part of the courtship when the male is close to the female, high-pitched squealing notes, together with imitations, are almost solely produced, and often for a considerable time without a pause. Now let us see how the males behave under the influence of a different kind of excitement. Remove a young one from the nest, when old enough to recognize and reply to its parents, and notice the effect produced. The male approaches within a few yards of you, twists and turns on the branches, or flutters and flaps along the ground, uttering short snatches of its song identically the same as when courting, but more often squealing and imitating other species. Here, then, we have a species which performs, not only during the period of courtship, but also at other periods of excitement in its life, a remarkable series of both bodily and, if I may use the term, vocal antics. We cannot disregard these facts. If the song has really been developed owing to the females showing a greater preference for the males with the more highly developed vocal powers, is it not a little curious that, during the courtship, the true song should be so far forgotten that the males, in their great excitement, indulge in a medley of imitations of the songs and call-notes of alien species?"

"The fact that birds with gorgeous plumage do not as a rule possess any great powers of song, and, on the other hand, that the best singers are as a rule dull-colored, is regarded as an indication of the reality of sexual selection, in so far as it proves that the excitement of the female has been essentially affected by only one of the characters of the male. If this were a true interpretation of the facts, which are not disputed, we should, by the same train of reasoning, expect to find that the bodily and vocal antics have been mutually exclusive, that the best singers do not, during their courtships perform in a manner which could be interpreted as a display of plumage. But we do not do so. The best singers *do* perform in the most extravagant manner possible, and this seems to me to lessen the importance that is to be attached to the mutual exclusiveness of gorgeous coloring and beautiful song.

"The view that I hold with regard to these extravagant bodily antics is that they are reflex actions directly resulting from any excessive excitement, that they are not confined solely to courtship, and do not in any way influence the female. This view, I am inclined to believe, gains considerable support from the fact that we find a parallel case in the vocal organs, namely, that whenever the excitement reaches a certain degree of intensity, no matter how different the stimulus may be, the reactions that follow are always similar."

On a preceding page he states that it is difficult to believe that any species can perform a greater variety of extravagant antics, bordering at times on the ludicrous, than those of the Blackcap under periods of excitement. The antics of the Great Bustard, Birds of Paradise, Argus Pheasants, etc., are very wonderful, and well known on account of the large size or conspicuous coloring of the birds; in the case of the Blackcap and other small common species the conditions are reversed, the birds being small and inconspicuously colored, and close attention to their habits is necessary to realize what is really taking place.

Mr. Howard, with his analytical temperament and psychological attitude, also ventures to call in question the affection or devotion it is customary to recognize in birds. On this point he says: "I am doubtful whether such an emotion as affection, using the term in the sense applied to human personality, influences their actions to any degree, or, indeed, even exists. There are many birds that pair for life, and there are some apparently pine for a lost mate, and these facts seem to show something more than mere passion, but, on the other hand, the negative evidence — that of the callous behavior of the males, except during the period of sexual passion, of the desertion of the female by the male directly the young are able to take care of themselves, of polygamy, and of the replacement of a lost mate again and again in an incredibly short space of time — is so strong that it precludes the possibility of the existence in at least a large majority of the cases, of any feeling beyond a momentary passion."

These excerpts show the broad scope of the writer's subtitle, 'A History of their Lives,' while a perusal of his 'Life Histories' of the various species

treated will show how intimate is his knowledge of the ways of the birds whose attitudes under various degrees and kinds of excitement his photographic plates so well depict.— J. A. A.

Grinnell's 'A Bibliography of California Ornithology.'— In his 'A Bibliography of California Ornithology,' Mr. Grinnell¹ has contributed a work of very great convenience and value, for which he is entitled to the gratitude of every ornithologist who is seriously interested in North American ornithology. The labor of compiling, from original sources, the 1785 titles this work is stated to contain can be duly appreciated only by those who have attempted to prepare a complete bibliography of any large group of animals of any considerable geographical area. The work of collecting these titles, the author tells us, was begun in 1900, and has been continued at intervals to date. The list of titles here published covers the period from 1797 to the end of the year 1907, hence eleven years more than a full century. The author states that "every title, except two or three," has been copied by him personally, and "with constant regard to preserving precise wording, spelling and punctuation." The titles are annotated where insufficient to indicate the extent or nature of the information covered by them, particularly as regards the locality, and the species included, if new or constitute important records. In case the names used are not now current, their modern equivalents are indicated. In a word, the work is compiled on the lines of the best modern models, and apparently with a completeness that leaves little to be desired. It is not to be presumed, nor is it assumed by the author, that every title that should be included has been found, since it is a recognized impossibility to attain perfection in a work of this nature. It is properly rounded out by a series of indexes — to authors, to local lists by localities, to the serial publications cited, and to the bird names mentioned, both vernacular and systematic. It is safe to say that this is the most important contribution to the bibliography of North American ornithology since the Couesian contributions of 1878–1880 set the high standard here closely followed.— J. A. A.

Mearns on Philippine Birds.— Two recent papers by Dr. Mearns deal principally with the birds of the Philippine Islands, the first relating exclusively to them, while the other records species collected by Dr. Paul Bartsch in Borneo, Guam, and Midway Island. The first² includes three

¹ Cooper Ornithological Club | of California | Pacific Coast Avifauna | No. 5 | A Bibliography of California Ornithology | By | Joseph Grinnell | A Contribution from the Museum of Vertebrate Zoölogy | of the University of California | [seal] Santa Clara, California | Published by the Club | May 15, 1909 — Large 8vo, pp. 1–166, Price, \$1.50.

² Additions to the List of Philippine Birds, with Descriptions of new and rare Species. By Edgar Alexander Mearns, Associate in Biology, U. S. National Museum. Proc. U. S. Nat. Mus., Vol. XXXVI, No. 1679, pp. 435–447. Published May 22, 1909.

additions — *Sterna longipennis*, *Lobipes lobatus*, *Tanygnathus megalorhynchos* — collected by the author in 1906, and describes five new species and nine new subspecies, also all but three collected by the author during his explorations in the military service in 1904–1907.

The second paper is a report on Dr. Bartsch's collections¹ made chiefly in the Philippine Islands, but which include 7 species taken at Sandakan, Borneo, 5 taken at Guam Island, and 10 taken at Midway Island. The Philippine list includes 122 species and subspecies, two of the latter being described as new, all collected by Dr. Bartsch in 1908. The collection is said to fill many important gaps in the National Museum series of Philippine birds.— J. A. A.

Brooks on Birds Found in West Virginia.²— According to a note of explanation signed by the author, this 'Report' is a descriptive catalogue of a collection of mounted birds placed in the rooms of the State Board of Agriculture of West Virginia in November, 1908, and is not an attempt to give a complete list of the birds of the State, as the cover title of the 'Report' might seem to imply. This collection contains 331 specimens, representing 193 species, while the total list of West Virginia birds known to the author is 250. The caption of the list is: 'A Descriptive Catalogue of the Birds in the Ornithological Exhibit of the West Virginia Board of Agriculture.' It describes the character, as to age, sex and season, of the birds exhibited, with a brief statement of the range of the species, and of the manner of their occurrence in West Virginia, often with definite records of capture in the case of rare species; also a brief statement of the breeding range, nesting habits and food. While thus prepared with a view to local use, it contains matter of faunistic value. Four excellent colored plates illustrate the Rose-breasted Grosbeak, Blue Jay, Baltimore Oriole, and Purple Finch, all from the National Association of Audubon Societies' series of 'Educational Leaflets,' originally appearing in Vol. IX, 1908, of 'Bird-Lore,' though we here find no reference to the fact of their previous publication.— J. A. A.

Dearborn on Birds from British East Africa.³— This is an annotated list of the birds collected by Mrs. C. E. Akeley, on the last expedition of the Field Museum of Chicago to East Africa during the years 1905–07, under the direction of Mr. C. E. Akeley. An accompanying map indicates the

¹ A List of the Birds collected by Dr. Paul Bartsch in the Philippine Islands, Borneo, Guam, and Midway Island, with Descriptions of three new Forms. By Edgar Alexander Mearns, Associate in Biology, U. S. National Museum. Proc. U. S. Nat. Mus., Vol. XXXVI, No. 1683, pp. 463–468. Published May 27, 1909.

² No. 12. Report of the West Virginia State Board of Agriculture, for the Quarter ending December 31, 1908. [Subtitle:] List of Birds Found in West Virginia. Charleston, W. Va., 1909.— 8vo, pp. 1–65, and 4 col. pl.

³ Catalogue of a Collection of Birds from British East Africa. By Ned Dearborn, Assistant Curator of Ornithology. Field Museum of Natural History, Publication 135 = Orn. Series, Vol. I, No. 4, pp. 141–190. May, 1909.

localities at which collections were made, and a bibliography of the principal papers relating to the ornithology of the region precedes the list, which numbers 228 species, one of which is described as new. In addition to the dates and localities of the specimens, brief field notes are sometimes given, and also remarks on seasonal phases of plumage. Also in addition to the citation of the type locality and the original description of the species, references are often made to papers wherein the character and relationships of the species have been discussed by previous authors.— J. A. A.

Dawson and Bowles's 'The Birds of Washington.'— The large paper edition of this great work¹ is a magnificent example of modern book-making, the illustrations and typography being almost beyond criticism. The text is an up-to-date résumé of present knowledge of the birds of the State of Washington, an area of large extent and exceedingly diversified. It is, furthermore, the first attempt to deal with the birds of any portion of this continent in a *de luxe* style of such magnitude.

The treatment of the birds, the author tells us, is from the standpoint of the Washingtonian. The characteristic birds of the State are thus considered at length, says the author, "merely because they are ours and have to be reckoned with; while others, more interesting, perhaps, have not been considered at length simply because we are not responsible for them as characteristic birds of Washington." In brief, it may be said that 'The Birds of Washington' is constructed textually after the model of the author's previous 'The Birds of Ohio' (1903),— a very good model, by the way, and the present work, like its predecessor, may be characterized as a scientifically trustworthy popular manual of the birds of the region to which it relates, with a wealth of well-chosen illustrations, the full-page plates being especially noteworthy for their excellence and appropriateness. The 16 colored plates, from water color drawings by Allan Brooks, are especially pleasing, as are also the photogravure plates and a number of text illustrations from the same artist's drawings. Reproductions of photographs of birds, their nests and eggs, and their characteristic haunts, figure largely, as would be expected, in the several hundred text illustrations.

¹ The Birds of Washington | A Complete Scientific and | Popular Account of the 372 species of Birds | found in the State | By | William Leon Dawson, A. M., B. D., of Seattle | author of "The Birds of Ohio" | assisted by | John Hooper Bowles, of Tacoma | Illustrated by more than 300 original half-tones of birds in life, nests, | eggs, and favorite haunts, from photographs by the | author and others | Together with 40 drawings in the text and a series of | full-page color-plates | by | Allan Brooks | — | Large paper edition | with photogravures and special photographs | Sold only by subscription | Volume I [—11] | — Seattle | The Occidental Publishing Co. | 1909 | All rights reserved | — 2 vols. 4to. Vol. I, pp. xvi + 458, 8 col. pll., 3 photogravure pll., 3 photographs (inserts), 7 half-tone pll., and numerous half-tone text figures. Vol. II, pp. iii + 459-997, 8 col. pll., 3 photogravure pll., 3 photographs (inserts), 9 half-tone pll., and numerous half-tone text figures.

According to a statement on a fly-leaf preceding the title-page, the whole edition consists of 1250 copies, of which 200 numbered and signed copies form a special "Large Paper Edition."

While the work has been prepared and largely written by Mr. Dawson, he explains at length the authorship relation with Mr. Bowles, who had already in hand a work on the birds of Washington before Mr. Dawson appeared upon the scene, he crediting Mr. Bowles "with unbounded generosity" in placing the results of his labors at his disposal and in continuing his aid in the gathering of material for the work. Except in the case of articles signed with Mr. Bowles's name, "and in most of the unsigned articles on Grouse and Ducks, where our work has been a strict collaboration," says Mr. Dawson, "the actual writing of the book has fallen to my lot." The 'Analytical Keys,' at the end of Volume II (pp. 939-960), are accredited to Prof. Lynds Jones.

The nomenclature is that of the A. O. U. Check-List as revised down to and including the Fourteenth Supplement, but the arrangement is that of the Check-List reversed, with some further modifications, as explained in the preface. Volume I thus begins with the Oscines, with the Corvidæ as the leading family. As indicated on the title-page, the number of forms admitted as birds of Washington is 372. A 'British Columbia Supplement' (pp. 963-984), with annotations by Allan Brooks, gives (A) a list of the species included in 'The Birds of Washington' that have not as yet been reported from British Columbia; (B) "descriptions of species known to occur in British Columbia but presumed not to occur in Washington" (14 species), or (C) "whose occurrence in Washington is presumptive" (25 species); and (D) "Washington Hypothetical List," or "species not known to occur in British Columbia but likely to occur or have occurred in Washington" (22 species).

A 'publisher's note,' near the close of the work states that the 'Bibliographies' referred to in the preface as to be found in the 'Appendices' are omitted on account of 'The Birds of Washington' having already considerably exceeded the limits originally assigned to it. In fact, our chief criticism is in respect to the size and ponderosity of the work, which must interfere with its convenient use as a manual; but a work with such a profusion of illustrations, requiring the use of heavy paper, and making a thousand pages, could hardly be otherwise than ponderous, especially the large paper *de luxe* edition, like the sample now before us. It is, however, undeniably a handsome work, creditable alike to the author and his various collaborators, to the publishers, and to the State whose birds are here so effectively depicted.—J. A. A.

Shufeldt's 'Osteology of Birds.'—Although this work is entitled 'Osteology of Birds,' it is restricted to the 'Accipitres,' 'Gallinæ,' 'Anseres,' and the Cuckoos; and of these the forms treated in detail are mainly North American. It is divided into four sections, as follows: (1) 'Osteology of the Accipitres,' pp. 1-168, text figures 1-65, plates 1-16; (2) 'Osteology of the Gallinæ,' pp. 169-248, text figures 1-36, plates 1-8; (3) 'Osteology and

¹ Osteology of Birds. By R. W. Shufeldt, M. D. New York State Museum, Museum Bulletin 130. May 15, 1909. 8vo, pp. 1-381, with 145 text figures, and 26 half-tone plates.

Classification of the Anseres,' pp. 249-344, text figures 1-42, plates 1, 2; (4) 'Osteology of Coccystes glandarius: A Comparative Study of New and Old World Cocyges,' pp. 345-357, text figures, 1, 2. This is followed by a Bibliography of the author's writings that bear directly upon the Anatomy and Classification of Birds' (pp. 357-367), and the Index (pp. 369-381).

From the author's preface (dated "Washington, D. C., January 31, 1901") this work appears to be based on his numerous previous papers on the osteology and classification of birds, which are presented in new form, "thoroughly revised, amplified and improved," with, for the most part, "new illustrations." The author's long series of contributions to avian osteology are thus brought together in convenient form, and represent his latest views on the relationships of the groups here treated. Its publication as a 'Bulletin' of the New York State Museum has already been explained by the author in another connection (Auk, XXVI, April, 1907, p. 217).—J. A. A.

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NOTES AND NEWS.

CHARLES K. WORTHEN, an Associate of the American Ornithologists' Union, died at his home in Warsaw, Illinois, during the last week in May,¹ 1909, in the 59th year of his age, he having been born in Warsaw, September 6, 1850. His father, Amos H. Worthen, was for many years State Geologist of Illinois, residing at Springfield, where young Worthen was educated in the public schools. In 1867, he became associated with his father as draughtsman, and the ten years following this date he was engaged in illustrating the reports of the Illinois Geological Survey, and was also employed in a similar capacity on the reports of the Wheeler Surveys West of the One Hundredth Meridian. One winter was spent at the Agassiz Museum in Cambridge, Massachusetts, making drawings of the teeth of fossil sharks under the direction of Mr. Orestes H. St. John. Naturally, under such associations, he became strongly interested in natural history, but appears to have never seriously entered upon research work, and has hence published very little. His knowledge of the subject, however, was considerable, and his tastes led him to engage in the collection and sale of natural history specimens, in this way becoming well known to the naturalists of the country, and especially to museum curators, who found him always intelligent and trustworthy. For a number of years he was a member of the school board of Warsaw, and at the time of his death was one of the directors of the public library. Personally he was genial and companionable, of an optimistic temperament, and widely respected by his fellowtownsmen. He was married in 1873, and is survived by his widow, a son and two daughters. The press of Warsaw has paid high tribute to his memory as a valued citizen.

THE June issue of 'British Birds' (Volume III, No. 1) propounds a 'British Birds' scheme for marking ('tagging' birds, as an aid in acquiring definite information regarding the movements of individual birds, and thus obtaining light on some of the imperfectly understood features of bird migration. In an editorial on the subject, reference is made to results thus achieved in Denmark and Germany, and instructions are given in reference to the marking of birds and reporting their subsequent capture. In short, a system is proposed very much like that in vogue in this country (see Auk, XXVI, April, 1909, pp. 137-143), although no reference is here made to the American records or methods. Mr. H. F. Witherby, the editor of 'British Birds,' has prepared the following circular on the subject, for which we gladly give space in the present connection.

"A short while ago a Stork was shot in Rhodesia bearing upon its leg a metal ring, which proved that the bird had been marked in Prussia, when it was a nestling, by the Rossitten Bird Observatory, while more recently a Stork similarly 'ringed' in Hungary was shot in the Kalahari Desert.

¹ Exact date not yet received; the funeral was on May 29.

"Mr. H. F. Witherby, the Editor of *BRITISH BIRDS*, is inaugurating in connection with his Magazine a scheme for marking birds in a similar way in this country. It is hoped by this means to gain a more exact idea of the movements of individual birds than has ever been possible by any other method, and this should not only throw light upon the more general aspects of migration, but it should tell us a great deal that is at present obscure with regard to particular points. For example, while we may know the general distribution of a species in winter and summer, we do not know the extent of the migration of individual birds; or, indeed, whether in such cases as the Song-Thrush and Robin, certain individuals migrate at all. The movement of sea-birds are very little understood, and much might be learned from marking a large number. This plan might also tell us what influence age has upon plumage, etc.; where a young bird, whose birth-place is known, breeds; whether individuals return to previous nesting haunts, and whether pairs come together again in successive breeding seasons.

A number of the readers of *BRITISH BIRDS* are taking the matter up, and it is expected that a large number of birds of all kinds will be ringed this summer. The rings are extremely light and do not in any way interfere with the bird's power of flight, each is stamped "Witherby, High Holborn, London," and bears a distinctive number, which in the smaller sizes is stamped inside the ring, and it is hoped that anyone into whose hand should fall a bird so marked will send the bird and the ring, or, if this is not possible, then the particulars of the number on the ring, the species of bird, and the locality and date of capture to the address given."

Of special interest to ornithologists, as well as to students of biogeography in general, is Dr. Philip P. Calvert's map of the distribution of mean annual temperatures in Mexico and Central America, recently published in the *Proceedings of the Academy of Natural Sciences of Philadelphia* (Vol. LX, 1908, pl. xxvi). The map is colored to indicate five temperature zones, ranging from 10° to 30° C. (50° to 86° F.), each zone covering thus a range of 9° F., and distinguished by a different color. It is shown that a given mean annual temperature reaches a much higher latitude and a higher elevation on the Pacific coast than on the Atlantic; and that the mean annual temperature of the plateau region of Mexico (59°-68° F.) extends continuously but in narrowing width to about latitude 18° in southern Mexico, and thence in small and distantly separated areas to Nicaragua and Costa Rica.

A NEW natural history journal, entitled, 'The Midland Naturalist devoted to Natural History and primarily that of the Prairie States,' has made its appearance, the first number bearing date April, 1909. It is an octavo, and the first number, consisting of 28 pages and 3 plates, is mainly botanical. It contains, however, the beginning of a nominal 'Tentative List of the Birds of St. Joseph Co. Ind. and Vicinity,' which

indicates on the part of the author a considerable degree of conservatism in matters nomenclatural, or lack of familiarity with any standard authority later than the first edition of the A. O. U. Check-List. The magazine is published at Notre Dame, Indiana, under the editorship of J. A. Niewland, C. S. C., Ph. D., who is also apparently the publisher. (Price, \$1 a year, single numbers 20 cents.) The plea for the existence of this new aspirant for journalistic honors is the alleged want felt by the editor "for some ready means of publication" for students of the biota of the 'Midland States.'

A NEW French periodical devoted to ornithology is the '*Revue Française d'Ornithologie Scientifique et Pratique*,' the first number of which bears date 7 Mai, 1909. It is in royal octavo, the first number comprising 16 pages. It is to be devoted not only to birds, but to everything relating to birds. It is published by Louis Denise, 14 Rue Antoine-Roucher, Paris; price, 7 francs per year, 60 centimes per number. The acting editor is M. A. Menegaux, and it has the promise of support from other well-known French authorities.

THE Bureau of Science of the Government of the Philippine Islands has announced '*A Manual of Philippine Birds*,' by Richard C. McGregor, to be published in two parts of about 350 pages each, the first part being already in press. It will give descriptions of all the species of birds known to inhabit these islands, with much hitherto unpublished matter relating to their nests and eggs and habits. It is intended to meet the needs of bird-students, both professional and amateur, and will contain keys to the species, genera, and higher groups, as well as diagnoses. The work may be ordered in this country of the Macmillan Company, New York; price of the complete work, \$4.

INDEXES to periodical literature are so useful that it is a pleasure to call attention to the index to the first ten volumes of '*The Condor*,' prepared by Mr. H. B. Kaeding and just published as No. 6 of the '*Pacific Coast Avifauna*'. '*The Condor*, as is well known, is the '*Bulletin of the Cooper Ornithological Club*', the first volume of which carried this title only. The present index is prepared on much the same lines as the twenty-year index to '*The Auk*', compiled under the direction of Dr. Dwight, except that there is no attempt to discriminate the different kinds of information under the citations of species.

THE Provincial Museum of Natural History and Ethnology, Victoria, British Columbia, has recently issued an illustrated guide to the collections of Mammals, Birds, Reptiles and Fishes, prepared by the Curator, Mr. Francis Kermodé. It is profusely illustrated with half-tone plates of groups of mammals and birds and other exhibits in the Museum, and forms a large octavo brochure of nearly 100 pages, of which pages 21-74

are devoted to the birds. The text consists of annotated lists of the Vertebrates of British Columbia, so far as they are represented by specimens in the Victoria Museum. The birds of British Columbia are apparently quite fully shown, and the annotated list of the species gives briefly the manner of their occurrence in the Province, with often a short account of their habits. It is thus not only a Visitors' Guide to the collections but a source of information respecting the vertebrate fauna of the Province. As said by the Curator: "The Provincial Museum (being essentially a British Columbia Museum) necessarily contains only those specimens obtained within its borders, hence none of them were procured by exchange with other parts of the Continent, so that the value of a collection so truly local in its formation is incalculable."

THE June number of the 'Bulletin' of the New York Zoölogical Society is designated as the 'Wild-Life Preservation Number,' and is devoted to a summary of recent efforts for game protection and an attempt to promote further interest in this too long deferred awakening to the wholesale depletion of 'wild life.' This number of the 'Bulletin' contains a paper by the President of the Society, Professor Henry Fairfield Osborn, on 'The Zoölogical Society's Work for Wild Life,' and another by Madison Grant, the Secretary of the Society, on 'The Future of Our Fauna,' but most of the twenty pages that make up the number are by the Director, William T. Hornaday. Readers of 'The Auk' who recall Mr. Hornaday's paper on 'The Destruction of our Birds and Mammals: a Report on the Results of an Inquiry,' published in 1898 (Second Ann. Rep. New York Zoöl. Soc., for 1897, pp. 80-126), will not be surprised at meeting with exaggeration in the present connection, but will hardly be prepared for statements to the effect that scientific societies, scientific institutions, and scientific men have, with one or two mentioned exceptions, done little or nothing for the protection of birds and game; or to hear that: "Even down to 1896, the scientific ornithologists of America, as a body, had done *absolutely nothing* in the cause of bird protection." (Italics as in the original.)

As is well known, at the second meeting of the American Ornithologists' Union, held in 1884, the protection of birds was considered at length by the leading members, with the result that a 'Committee on Bird Protection' was appointed, and its report at each annual meeting of the Union in subsequent years was always a prominent feature of its sessions. Furthermore, as early as 1886, this Committee published the first 'broadside' in behalf of bird protection, under the title: 'American Ornithologists Union. Bulletin No. 1 of the Committee on Bird Protection. Destruction of our Native Birds.' It appeared originally as a supplement (16 pages, 4to) in 'Science' (for February 26, 1886), and was reprinted as a separate in large editions and widely distributed gratuitously. A few months later appeared 'Bulletin No. 2 of the [A. O. U.] Committee on Bird Protection,' dealing with 'Protection of Birds by Legislation.' This was originally printed in 'Forest and Stream' for November 11, 1886, and reissued in a large edition

(8 pages, 4to.) for gratuitous distribution. In this 'Bulletin' the then existing New York law for the 'Preservation of Song and Wild Birds' was analysed and criticised, and a 'revised draft' presented as a substitute. The Committee's draft later became, in substance, not only the law for the protection of birds in the State of New York, but has now been adopted by nearly every State and Territory in the United States, and is everywhere known as the 'A. O. U. Model Law.'

The A. O. U. Committee on Bird Protection is also the parent of the now widespread Audubon movement which was originally started in 1886 by members of the American Ornithologists' Union. The reports of the A. O. U. Committee and of the National Association of Audubon Societies were published in 'The Auk,' the official organ of the Union, until five years ago, the last report forming a document of 112 pages with numerous half-tone illustrations. Further comment on what "the scientific ornithologists of America, as a body," have "not" done is unnecessary, although it may be added that the present directorate and the principal officers of the National Association of Audubon Societies are all members, and nearly all of them Fellows, of the American Ornithologists' Union.

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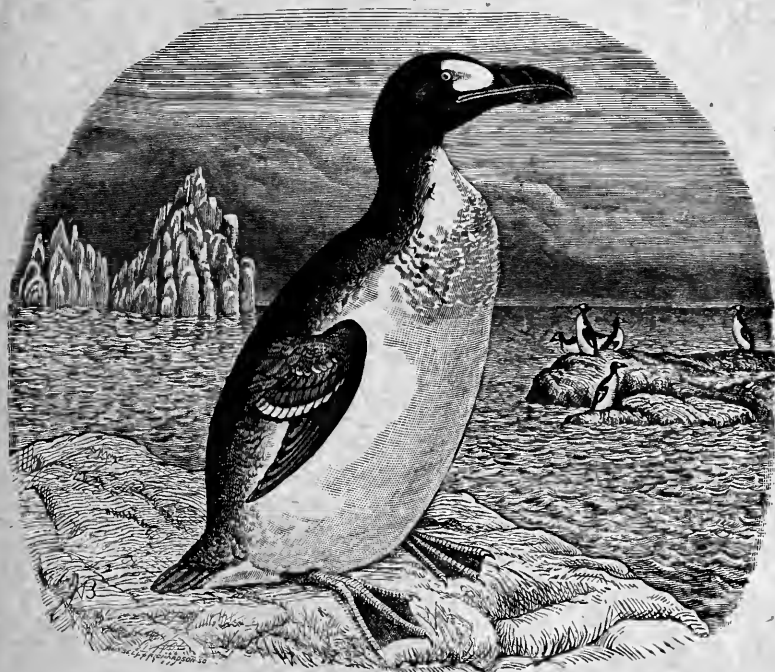
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A NESTING OF THE BLUE-WINGED WARBLER IN MASSACHUSETTS.

BY HORACE W. WRIGHT.

IN A trip for general bird-observation to Sudbury, Massachusetts, on May 19, 1909, upon taking a different road back to the railroad station in the afternoon from that which I had intended to take, I came upon two warblers calling near the roadside, whose call-notes attracted my notice as not so familiar that I could name the species from which they came. So turning up a side road a few steps and bringing my field glass upon one of the two, I perceived that it was apparently a Blue-winged Warbler (*Vermivora pinus*). The second bird, which was undoubtedly the female, at once disappeared from sight, and I did not have an opportunity to view her. But I was able to keep in sight the male bird in his successive flights from one tree to another and in his movements through the branches of a good-sized elm in which he busied himself in obtaining food. The elm was one of several which stand immediately by the State highway through Sudbury to Marlboro. As I obtained full and near views of him again and again in his successive perches, once at not longer range than twenty-five feet and only slightly above the level of my eye, my first identification of the bird was established beyond a doubt. Presently the warbler gave the locust-like song for which I had been waiting, gave it a half-dozen times, *swe-e-e-e-e ze-e-e-e*, quite as described by Mr. F. L. Burns in Chapman's 'Warblers of North America.' The movements of the bird

were active but not restless. Twice an automobile, passing on the highway under the elms, started the Bluewing from his busy search for food among the leaves, and he flew back each time to the sapling in which I had had my first view of him. The return to the roadside elms, however, was quickly made each time. Before I passed on to get my train I had spent a half-hour with this warbler, enjoying my first experience with the species, very rare as a visitant to Massachusetts, so far as records indicate, and never having been known to nest within the borders of the State.

Mr. William Brewster, in a foot-note to Minot's 'Land-Birds and Game-Birds of New England,' states: "This Warbler is a common summer resident of southern Connecticut, but is not known to occur regularly north of Hartford, and is most numerous in the country immediately bordering on the Sound and in the lower valley of the Connecticut River. Several specimens have been taken in Massachusetts, where, however, the species does not seem to have attained a permanent foothold."

There are only six recorded occurrences of the Blue-winged Warbler in Massachusetts. Four of these are given in Messrs. Howe and Allen's 'Birds of Massachusetts,' published in 1901, namely: "a small flock" at Dedham about the 12th or 15th of May, 1857, found by E. A. Samuels; a male bird captured at West Roxbury on May 17, 1878, by Mr. C. N. Hammond; one seen at Dorchester on May 15, 1897, by Forster H. Brackett; and one taken at Taunton by J. H. Morse (date unknown). To these occurrences Mr. Wells W. Cooke, in his 'Distribution and Migration of North American Warblers,' adds a fifth, that of a bird seen at Framingham on May 13, 1896 (observer's name not given), and 'The Auk' of July, 1902, p. 291, adds a sixth, that of a singing male bird seen at Waverly on May 29, 1902, by Mr. Guy Emerson.

To my friend, Mr. Eugene E. Caduc, in whose ripe intelligence and patient sagacity as a bird-observer I had acquired a full measure of confidence through many rambles afield with him, I conveyed the news of my happy discovery, and two days later, on May 21, he visited the haunt by the roadside where I had seen the pair and heard the male bird sing. I was unable to accompany him. His written statement of his trip in part is: "I came upon the birds about 2.30 in the afternoon. I soon discovered that the female was

busy collecting nesting-material. I watched her for perhaps three-quarters of an hour. Three different times she disappeared in the underbrush and returned to the roadside for more material. I was not able to locate the nest, however. During all this time the male bird perched on a nearby tree singing, but took no part in the building of the nest. A dog in chase of a chipmunk frightened them, and I saw them no more." Mr. Caduc describes the female bird as similar in coloration to the male bird, only slightly duller.

On May 26, about 10 A. M., I again visited the spot and after waiting a half-hour heard the Bluewing's song. The singing was maintained for about a half-hour, and then there was another equal period when I could not hear the song or get evidence of the bird. The female bird was neither seen nor heard. The male moved about through the same trees as before, but took a somewhat wider range. The singing haunt of the male consisted of a small mowing-plot cornering at the roadside and backed by a pasture of considerable extent containing an orchard of old apple trees which reached back in succession for nearly a quarter of a mile. The pasture was dotted also with chestnut trees. Beside the mowing was a swampy hollow through which flowed a brook coming down through the pasture from a wooded hillside in the rear. On the other side of the mowing-plot the land rose also to pasture and to second-growth woodland composed of white and pitch pines, birches, oaks, and cedars, with berry bushes as undergrowth and the surface where exposed covered with dry moss. The elms, which proved a favorite feeding and singing place of the male bird, stood beside the highway in front of this woodland. Thus at the spot chosen by this pair of warblers there is much diversity of natural feature. The location is also within a mile and in sight of the old Wayside Inn made famous by Longfellow in his poem entitled 'Tales of a Wayside Inn.' On this second occasion in the forenoon I found these other warbler voices united with the Bluewing's, the Goldenwing's, the Nashville's, the Yellow's, the Chestnut-side's, the Black-throated Green's, the Oven-bird's, the Yellow-throat's, and the Redstart's.

On May 29, upon further expressions of urgent desire on my part for more knowledge as to the nesting of these Bluewings, Mr. Caduc made a second visit to the locality, arriving about 9.30 in

company with Mr. and Mrs. Edmund E. Bridge. They found the male bird feeding and in song in a pasture perhaps fifty feet from the highway. He seemed to be dividing his time between the apple and the elm trees. Mr. Caduc states that all three had an excellent view of the warbler before he flew away and that the others then continued their walk, while he set himself to the task of locating the nest. His statement is: "I remained to await developments. I found a seat on a stone, well screened by a barberry bush, and waited for a half-hour, when the male bird returned to the same locality as before. For three-quarters of an hour he continued feeding and uttering the same song as when first seen. He then changed to a call-note not unlike that of a Chipping Sparrow. Very soon I detected an answer being made and the female bird was seen for the first time [that day]. She flew to a pool in a swampy section of the same pasture and bathed freely. Then alighting on the same tree with her mate she was completing her toilet, when to my surprise she flew to a black ant hill and took a dust bath much after the manner of the House Sparrow. This done, she again returned to the pool and drank freely, but I could not see that she bathed again. Up to this time I do not think that she had eaten anything, but she now began searching for food, and in a more hurried manner than her mate. Passing from tree to tree both birds soon showed me my real work had now begun. I had no difficulty in following them, however, often being within three or four feet of them, as they moved on feeding from one tree to another. They did not seem to fear me. Neither bird gave voice to any note whatever as over the pasture they led me and then about two hundred feet into a wood. This wood was composed of chestnuts, oaks, maples, birches, and white pines, mostly of second growth, with considerable underbrush including tangles of horsebriar and wild grape, and with a brook flowing near by. Here the female bird took to the ground and finally was lost to view behind a decayed stump about a foot high and a growth of fern. A wagon-road had been cut through the wood, and this I had been able to follow up to this point. But in order to follow her course through the underbrush I was obliged to assume a crouching attitude, and it became necessary to approach on all-fours, as her point of disappearance was about fifteen feet from the road. In this manner

I proceeded to the stump, when she took wing. Carefully parting the ferns, I saw a nest containing four eggs of the warbler and an egg of a Cowbird. The latter I removed, and on breaking it I could discover no sign of incubation. The four eggs were all of about the same shape, but very much smaller at one end. Three were well mottled with brown spots, and the fourth appeared to be pure white. The nest was of coarse material lined with fine strips of bark or something of that kind. It was a cup-shaped structure, built on a lump of earth held securely in position by two exposed roots of the stump, and raised two or three inches from the ground. It was further protected by the ferns. From the place by the roadside, from which the pair started and where the male bird was found each time singing and the female had bathed, to the nest-location was about twelve hundred feet. In the immediate vicinity of the nest were also the nests of Wood Thrush, Oven-bird, Towhee, Yellow Warbler, and Flicker."

Mr. Caduc thus accomplished his purpose, which was "to camp with the birds" until he found their nest, and he brought back to me in most satisfying fulness the details as given above. But although he had furnished me a careful description of the location of the nest, when I went again on May 31, I came away without seeing it, not finding it readily and fearing to trample about the haunt lest I disturb the mother-bird and be the means of failure to the nesting. And the one important thing, as we regarded it, was that the nesting should go successfully through and the young be reared. Thereby the planting of the species in this locality or in the State might be secured. We, therefore, imparted our knowledge of the nesting site to no one; for had we done so, the nest was no longer in our keeping, and we could not foresee what might happen to prevent the rearing of this family. So I made no further visits to the place and left it with Mr. Caduc to make such periodical visits as would ensure a knowledge, if possible, of how the nesting progressed and what its issue would be. How well he timed his visits for gaining all the essential facts, extracts from his letters to me after I had left the city will show.

On this last visit which I made I heard the male Bluewing sing as usual by the roadside, a spot so far away from the nest, nearly a quarter of a mile, indeed, that his mate could never have heard his voice, as day after day he sang there.

In the vicinity of the nesting spot of the Bluewings I heard among other songs the songs of Wood Thrush, Rose-breasted Grosbeak, and Scarlet Tanager. Two Canadian Warblers also sang there. Whether these were summer resident or migrant birds I could not determine at that time. Also not far away I came upon a silent Hermit Thrush. The date was late for a migrant bird, and it may have been, therefore, a summer resident. Two miles away in the same town on May 12 I had heard a Hermit Thrush sing as freely and finely at mid-day as the voices of the species are regularly heard in the White Mountains, and I could not think that this beautiful songster was other than a resident bird. In three separate pieces of woodland in this town of Sudbury the song of the Blue-headed Vireo was also heard up to the end of May, and one pair of the birds was seen, indicating probable nestings of that species.

On June 6 the next visit to the nest was made by Mr. Caduc. He wrote me: "I found the female bird at home and on the nest. The ferns had been gnawed off close to the ground by some animal. There were but four eggs in the nest. (Our query had been whether it would be found that another egg had been laid by the warbler or, perchance, that the Cowbird had deposited another egg.) I was not able to either see or hear the male bird."

On June 9 another visit was made. Mr. Caduc writes: "Again the mother bird was at home to receive me. As she left the nest, I observed that there were three little bald birdlings there and that the last egg had a crack in it, showing the wee thing in frantic efforts to be liberated. I remained just long enough to see this and then left. Again she gave no cry of alarm on leaving the nest. She lit on a bramble near by, and I could see with my glass that she was all of a tremble. I found other visitors also at the little nest and learned what it was that destroyed the ferns, a mother cottontail and four little ones. They were having such a feast on what was left I hated to frighten them away. There were young in the Wood Thrush's nest also. I also found near the thrush's nest a nest of flying squirrels."

Mr. Caduc again visited the nest on June 15. He writes: "Well, Mr. and Mrs. Bluewing and their four children send you their greeting and hope you have enjoyed yourself to-day as much as

they have. Now for details. I arrived at the little pool of water by the roadside at about 3.15, and there was the male bird having his bath. It required just thirteen minutes after I arrived for him to finish his toilet. I required no glass to see him. I simply leaned on the fence-rail and looked down on him. As soon as he had finished he just quietly stole away without my being able to detect him in the act. I then started for the nest. No one was at home when I arrived but the babies; but four pair of bright little eyes watched me intently, not at all alarmed, as shown by one of them standing up and shaking himself. I then had a chance to see that this one at least was feathered enough to show the prevailing colors of the parents, not so bright, of course, a sort of dusky olive on the back and the underparts of a buff tinge. I had been there but a short time when one of the parent birds came with a mouthful of green worms that were fed out to two of the nestlings, the largest bird not being chosen this time. This was exactly 3.46 by my watch. Soon both parent birds were busy feeding and until 4.45 the little ones were fed on an average every minute and a half. It seemed to me also as if each parent fed the same two little ones all the time. During the hour's observation there was not a sound from either the old or the young birds. All the little ones stood up to get their food, so I could see that they all showed about the same color. Two, however, were quite a little larger than the others. None of the little ones left the nest, but I have not the slightest idea they will be there on my next call, and I may not see them again; but I regard them now as out of danger."

On his next visit, June 18, Mr. Caduc found the nest empty. The young were being fed by one of the parents in a clump of trees in a small clearing of the wood not far from the nesting-site. He states: "I saw all four of the young birds, but only one parent bird. The young were perched about three feet from the ground, and when the parent bird appeared with food, they flew to her with open mouths. If they made any calls, I failed to hear them. Indeed, I cannot remember having heard a sound or call of any kind from either of the birds since the day I found the nest." Mr. Caduc brought the empty nest with him to Boston. He describes the nest as not just like the one described by Mr. Burns in Chapman's 'Warblers,' stating, "I see no evidence of the lining being

laid across, and the leaves are so old and withered it is difficult to tell how they are arranged. Probably before the young had been raised and the nest trodden out of shape, it might have appeared more like the nest described by Mr. Burns: It is in pretty good condition. A small part of it broke off as I was taking it up, but it is not damaged much. The nest, as it rested, was backed up to a decayed stump between two exposed roots. In removing it the back became somewhat damaged and fell off as soon as removed. In its original location it had more of a cup-shape than now. It seems to have spread some, but by pressing the two ends gently you can get a very correct idea of how it looked when discovered."

The six visits of Mr. Caduc, therefore, resulted in determining these six essential facts: the building of a nest; the location of the nest and its holding four eggs of the warbler and a Cowbird's egg, the destruction of the latter removing a menace to the successful rearing of the family; that four eggs in this nesting was the complete set; that three of the birdlings were hatched and the fourth hatching; that they had thriven and were almost grown; and that they were safely on the wing under the care of one at least of the parent birds. A happy consummation of the birds' choice in pressing their way onward into Massachusetts and selecting this spot in Sudbury for their nesting. The consummation furnishes also a basis for a hope that we may soon again have another nesting of Blue-winged Warblers chronicled in the State and in time, perhaps, another warbler added to the list of those regularly resident in Massachusetts. We have done nothing to cut off such a hope, while we have secured all the important facts pertaining to this first recorded nesting of the species within the State.

To Mr. Caduc we are wholly indebted for the full knowledge of this first nesting, and he has kindly permitted me to give it to the readers of 'The Auk.' Each trip made, and six were taken, consisted of forty miles by rail and a three-mile walk. Sudbury is situated twenty miles westward from Boston.

With respect to the date of this nesting and its successive stages it may be well to condense the facts. The birds were found on May 19. The female was seen carrying nest-material on May 21. Presumably the nest was completed as early as May 24. The nest was located and contained four eggs on May 29. The eggs

were presumably laid, May 26 to 29. Incubation probably began on May 29. Eleven days later, June 9, there were three birdlings and the fourth egg was hatching. Period of incubation was ten or eleven days. Six days later the nestlings were well grown. Three days later, June 18, the nest was empty and the birdlings were upon boughs of near trees fed by one of the parent birds. The nestlings left the nest on the eighth or ninth day.

This nesting was a week later than that given account of by Mr. B. S. Bowdish at Demarest, New Jersey, in 1905 [Auk, Jan., 1906, p. 16]. On May 12 Mr. Bowdish found the female "with a dead oak leaf in her bill." On the 15th he found the nest "built under a dead branch, near the base of a small cedar, and entirely covered with dead oak leaves, so laid as to leave only a mouse-like entrance. At this time no eggs had been laid, the nest seeming to be just finished. The first egg was laid on the 19th, and one egg added each day, the fifth and last egg being deposited May 23. The eggs hatched June 2, the tenth day after deposition." On the other hand this nesting was four days earlier than that which Mr. Burns gives in detail as watched by him at Berwyn, Pennsylvania, in which instance five young were just hatched on June 13 at 6.30 P. M. and the nest was vacated on June 21 at 6.12 P. M., eight days after incubation was completed.

The Sudbury birds would seem, therefore, to have lost no time in choosing a nesting-spot and carrying forward their happy plan for a family. This promptness of action, if it should not be termed earliness of procedure, suggests the thought that perhaps the ground was not entirely strange to them. This idea is somewhat strengthened by the record of the Blue-winged Warbler seen at Framingham on May 13, 1896. The latter town and Sudbury adjoin.

Although the Sudbury male Blue-winged Warbler is the only one of the species which I have spent time with and seen again and again upon three successive visits, yet on May 10, 1905, at Belmont, I had a momentary very clear view of a warbler of this species. I wrote down a description of its plumage on the spot, and I have had no reason to doubt the identification in the subsequent years. But as I could not announce the bird as a Bluewing with absolute certainty, I have not made the record public until now. The Belmont bird was lost to view after I had had a moment's distinct sight of it, and I could not find it again on that day neither on the next day.

AN INQUIRY INTO THE HISTORY OF THE CURRENT
ENGLISH NAMES OF NORTH AMERICAN
LAND BIRDS.

BY SPENCER TROTTER.

TECHNICAL nomenclature is the embodiment of that orderly and definite arrangement of knowledge which constitutes a science. It serves to symbolize a conception of the relationships that exist between living beings, one with another, and is at once the expression of a logical system of classification; a working basis for the ideal scheme which the mind constructs from observed facts. It is eminently a rational process. In direct contrast to this is the vernacular — the loose, quite indefinite and often haphazard way of naming things, that has its root in the soil of common life. The stratum out of which it springs is emotional rather than rational. In ornithology these two contrasted forms of the embodied ideal — the technical or scientific and the vernacular names — have been of more equal value than in many other branches of natural history, from the fact that birds have always presented themselves to men's minds in a peculiarly attractive way. Most of us think of the various kinds of birds, certainly of the more familiar ones, in terms of the vernacular rather than in the garb of science. A Song Sparrow is a Song Sparrow more often than a *Melospiza melodia* as well to the ornithologist as to the untechnical wayfarer.

A respectable antiquity attaches itself to the vernacular. Long before the scientific mind had invaded the field of natural history the folk had given voice to its ideas about various animate and inanimate things. A vast vocabulary of popular names was an early heritage of the common people. With this stock of names and notions about Old World birds the colonists in Virginia and New England were fairly well equipped, and the more familiar birds of the new country soon received names indicative of some trait or likeness to certain of the Old World varieties. Mark Catesby in his *History of Carolina* was the first one to give any substantial account of American birds, and his work contains an

array of names, some of them more or less familiar in the speech of to-day. To William Bartram we owe a large number of our common bird names, names that reached the intellectual world of eighteenth century England through the works of Edwards, Pennant and Latham. Alexander Wilson was likewise a large debtor to Bartram for the names of numerous species, but he blazed his own trail by applying names to species discovered by himself as well as in the recasting of many Bartramian names.

In the present inquiry I have arranged the matter of the history of our American bird names under the following six heads —

- I. Names of Old English origin applied to American Birds.
- II. Names derived from a Latin equivalent.
- III. Names suggested by voice.
- IV. Names suggested by some peculiar habit or habitat.
- V. Names suggested by color or other external feature.
- VI. Names suggested by geographical locality (place-names) or in honor of some person.

I. NAMES OF OLD ENGLISH ORIGIN.

Many of the Catesbian names of birds undoubtedly originated in the vernacular of the colonists and some are clearly of Old English ancestry. In the main they are of generic rather than of specific application, as is the case with most of the folk terms for natural objects. The specific distinction is often one of locality merely, as for example "the cuckow of Carolina." Relationship is often broadly recognized by the people and embodied in a general name with appropriate qualifications to indicate minor differences or differences in distribution. The "species" of the *profanum vulgus*, however, more nearly corresponds to the generic conception of the naturalist, even in some cases to the idea embodied in the term "family."

A number of these Old World bird names, given to American birds, appear very early in the history of English speech. In a vocabulary compiled by Archbishop Ælfric toward the close of the tenth century (955-1020 A. D.) there is a *Nomina Avium* in which a number of bird names appear, though somewhat different from their modern form. In this list the Robin Redbreast is called

"rudduc" or "ruddock" which long continued to be its general English name and is probably still alive in local dialects. The word appears as a variant of the modern "ruddy," referring no doubt to the russet of the bird's breast. The earliest recorded instance of the use of the popular epithet "robin," which as a word of endearment has been transferred to many different birds throughout the English speaking world, occurs in the *Nomina Avium* of an English vocabulary of the fifteenth century where the name appears as "robynet redbreast," literally "little robin redbreast." Our American Robin was known to the early southern colonists as the "Fieldfare" and is so termed by Catesby ("The Fieldfare of Carolina," Vol. I, 29). The bird has many of the qualities of the Fieldfare, and like its British congener came from the north in autumn, scattering over the cleared lands in loose flocks. William Bartram (Travels, 290) speaks of it as the "Fieldfare or robin redbreast," and Kalm mentions it under the latter name (English Trans., II, 90). Our familiar name "robin" is thus a contraction of the "robin redbreast" of old English speech.

In the *Nomina Avium* of Ælfric the cuckoo occurs as "geac." In some provincial dialects it is still called a "gowk," a survival of the little altered Anglo-Saxon name. "Cuckoo" or "Cuckow" (the latter an earlier form of the name and given as such by Catesby) is undoubtedly derived through later Norman speech (French *coucou*; Italian *cucco* or *cuculo*; old English *cuccu*). The German name *kuckuk* or *koekoek*, the Danish *kukker* or *gjög*, and the Swedish *gök* are clearly allied to the Anglo-Saxon *geac* or *gowk*, all being undoubted variants expressive of the bird's voice, and the same is true of "cuckoo" and its variants.¹ The colonists were not deceived in giving to the American species its rightful name, though Catesby may have been the first to bestow it.

"Crow" appears in Ælfric's vocabulary as *crawe*; "kite" as *glida* and *glède*, the last name continuing down to the fifteenth century. The Anglo Saxon *staern* or *staer* (later *stare*) has become the modern "starling."

A manuscript in the Royal Library at Brussels, of eleventh

¹To call a man a "gawk" (simpleton) appears equivalent to calling him a "cuckoo," a term of no uncertain meaning in the old days.

century date, contains a number of bird names among which are the *Gos-hafoc* (literally "Goose hawk") modernized to "Goshawk," and *Spear-hafoc* ("Sparrow hawk"). It seems curious that our little American Sparrow Hawk has not borne the name of its near relative the Kestrel rather than that of the quite different Sparrow Hawk of the Old World. "Turtle" was an old name for the Dove and appears as such in Catesby ("The Turtle of Carolina," I, 24). It originated, as Skeat observes, from an effort to express the cooing note and is altogether different from the word used to designate the reptile of the same name. This last was rendered by English sailors into "turtle" from the Spanish *tortuga*.

Wren, Sparrow and Swallow appear in these old vocabularies as *Wraenna*, *Spearwa* and *Swealewe*. The first of these names Skeat asserts is derived from a base *Wrin*, to squeal, chirp or whine, in allusion to the bird's voice. A curious old belief existed among the folk of several European countries that the Wren was the "King of Birds." Hence, probably the generic term *Regulus* formerly applied to various species of Wren, and, likewise, its English equivalent "Kinglet." "Sparrow" is literally a "flutterer" (*Spar*, to quiver), and "Swallow" means a "tosser, or mover to and fro; from its flight" (Skeat). "Lark" has been softened down from the Old English "laverok" or "laverock" (Anglo-Saxon *laverce*), literally "a Worker of Guile," from some old superstition regarding the bird as of ill omen. The bestowal of this name upon an American bird allied to the starlings was no doubt due to an effort on the part of the early settlers to name birds after the more familiar ones of the homeland. The ground-nesting habits, the long hind claw, the loud twittering flight notes and clear song of the American bird may have given some slight reason for this incongruous title.

"Thrush" with its variants "throistle" and "throistle-kok," as applied to the Song Thrush (*Turdus musicus*) of Europe, is an old word and appears in its older forms in a treatise by Walter de Bibbesworth at the end of the thirteenth century. In the Brussels Manuscript "throistle" seems to refer to the Missel Thrush (*Turdus viscivorus*). The Song Thrush is also referred to by its other old English name of "Maviz" (later "Mavis"). In this same treatise of de Bibbesworth's the European Blackbird (*Turdus merula*) is

spoken of as "osel" or "hosel-brit," and likewise by its Old English Name of "Merle." Later it became "Ousel-cock" as in the quaint ditty in *Midsummer-Nights' Dream* —

"The ousel-cock, so black of hue,
With orange-tawny bill,
The throstle with his note so true,
The wren with little quill.
The finch, the sparrow, and the lark,
The plain-song cuckoo grey,
Whose note full many a man doth mark,
And dares not answer, nay; . . ."

"Mawys" or "Mavis" as a dialectic name has lasted down to the present day in the counties of East England. It seems curious that it was not transferred to any American thrush notably the Wood Thrush. "Osel" is clearly the parent word of the modern "Ousel" and in this latter form is still applied to an allied species of the European Blackbird — the Ring-ousel (*T. torquatus*), as well as to a distinct, though related, family — the Dippers or Water Ousels (Cinclidæ).

Without doubt the word "Thrasher," applied to the birds of the American genus *Toxostoma*, is a variant of "Thrush" and "Throstle," for we find "Thrushel" and "Thrusher" as variants in the Provincial English dialects. The term "Thrasher" occurs in Barton's 'Fragments' (1799), and Wilson also uses the name as a vernacular in his account of the Brown Thrush or "Ferruginous Thrush" (*Toxostoma rufum*) as he calls it, both of which facts are clear evidence as to the early current use of this common name for the species in question. Catesby figures the bird under the title "Fox-coloured Thrush" (I, 28). In the South it is known here and there as the "Sandy Mocker" and formerly as the "French Mockingbird," this last from the fact that its song was considered inferior to that of the true Mockingbird (*Mimus polyglottos*) — all things French being regarded with a certain contempt by the English colonists. There is a curious suggestion of the throstle's song in the song of our Brown Thrasher, a fact also noted by Wilson, and this may have given rise to the current vernacular name.

In a metrical vocabulary, supposedly of the fourteenth century, "sparrow" appears in its modern form; likewise "larke," "pye"

(the Magpie, "mag" being a contraction of "Magot" or "Madge," a feminine name formerly bestowed upon this bird), "revyn" (raven), "parthryd," and "quale." "Jay" also appears in its present day spelling and with its Latin equivalent *Graculusque*, which may be the origin of our modern word "Grackle." "Jay" is from old French "gai" equivalent to "gay" (plumage).

In a *Nominale*, or list of words, of fifteenth century date we find "wagsterd" (Wagtail), "nuthage" (Nuthatch), and "buntyle" (Bunting). In a curious pictorial vocabulary, also of the fifteenth century, "Kingfisher" appears as "kynges-fychere" and "Woodpecker" as "wodake" or "woodhock." Our "Redstart" evidently received its name by suggestion from a very different bird of the Old World (*Ruticilla phœnicurus*). It is so called by Catesby (I, 67). "Start" is from Anglo-Saxon "steort" — a tail. "Titmouse" has been transferred to various American species of the family (Catesby figures the "Crested Titmouse," I, 57), the prefix "tit" meaning small. "Mouse" is from Anglo-Saxon *māse*, a name, according to Skeat, for several kinds of small birds and not to be confounded with the mammal of the same name. Hence, the plural "titmouses," not "titmice," is the proper form though usage has established it otherwise. "Shrike" is another name transferred from European to allied American species. The name probably had its origin in the voice of this bird or of some thrush, and later bestowed upon the members of the Laniidæ (see Newton, Dict. of Birds, 843). "Martin" (and its older form "Martlet") was evidently a nickname applied to a European Swallow (*Chelidon urbica*) and given by the colonists to our species of the genus *Progne*. Bartram calls the bird "The great purple martin."

"Blackbird," applied to certain American species of Icteridæ, is a name suggested purely by color. Catesby early gave to our *Agelaius phœniceus* its more nearly correct title of "Red-wing'd Starling" (I, 13). Kalm (Forster) uses the older form "stare" (Eng. Trans., II, 73-79) and likewise refers to the species of *Quiscalus* as "blackbirds," remarking that "The English call them *blackbirds*" (Eng. Trans., I, 291). Our Goldfinch appears first in Catesby as "The American Goldfinch" (I, 43), the name clearly borrowed from the Old World *Carduelis elegans*. "Siskin" in like manner comes from the Old World, the word being originally

of Scandinavian origin and meaning "chirper" or "piper." "Snow Bunting" is the old name of *Plectrophenax nivalis* and should rightly replace the fanciful "Snowflake." Our "Tree Sparrow" is the result of a confusion of the American species (*Spizella monticola*) with the Mountain or Tree Sparrow of Europe (*Passer montanus*). This was corrected by Pennant, but the name "tree" was retained.

A rather curious case of name transfer is that of our Yellow-breasted Chat (*Icteria virens*). The bird first appears under this title in Catesby's Work (I, 50), and was evidently so-called by him in a mistaken idea that it was related to the birds of the same name belonging to the European genus *Saxicola*. This fact is made evident by the Latin word *œnanthe* used in the descriptive designation.

The name "buzzard" as applied to the Turkey Vulture appears early in the literature of American birds. Catesby calls it "Turkey Buzzard" (I, 6). As an old English name of Norman French derivation (*Busard*, Latin *Buteo*) it had, as Newton points out (Dict. of Birds, 767), a definite meaning in relation to the old sport of "hawking." Birds of the genera *Buteo* and *Circus* (Harrier) were styled "buzzards" (more especially the species of the former genus), of slow and heavy flight, and "were regarded with infinite scorn, and hence in common English to call a man a buzzard is to denounce him as stupid." With the exception of eagles and owls and a few kites all birds of prey in this country are termed "hawks," and "buzzard" has been relegated to this slow-moving, carrion-feeding species.

II. NAMES DERIVED FROM A LATIN EQUIVALENT.

Several of our English bird names have come into every-day speech by the anglicizing of their generic titles. The Linnæan genus *Oriolus* (from "Oriole," Latin *aurum*, gold) included certain species of Icteridæ which though very different from the European *Oriolus galbula*, still bear its name. "Junco" and "Vireo" are anglicized generic names. The word "grackle" applied to certain species of our Icteridæ appears to be an anglicized word derived from the Linnæan genus *Gracula*. The word

originally referred to the daw or jackdaw of Europe and the relationship between the American birds and the European species, though somewhat distant, was recognized by early writers. *Quiscalus quiscula* appears in Catesby as "The Purple Jackdaw" (I, 12). Bartram calls it the "Lesser purple jackdaw or crow blackbird" (the first notice I have found of this last common name). Wilson calls it the "Purple Grackle," from which source it has without doubt spread into the current vernacular of ornithology, though not into the speech of the people at large.

The name "Parula" recently in vogue for the warblers of the genus *Compsothlypis* is clearly borrowed from the old Bonaparte genus *Parula* (diminutive of titmouse). The bird (*C. americana*) has appeared under various titles — "the Finch Creeper" of Catesby (I, 64), "the various coloured little finch creeper" of Bartram (Travels, 292), and the "Blue Yellow-backed Warbler" of Wilson, Audubon and later authors.

In "Kinglet" we have a word rendered into English from the generic name *Regulus* (Cuvier) though its use is somewhat recent, "wren" being the vernacular designation of the species of *Regulus* until a comparatively late period. Edwards (Gleanings, V, 95) refers to the species as "Le Roitelet" (also Buffon).

"Tanager" is another derived word from the Linnæan genus *Tanagra*, probably of Brazilian origin (Marcgrave, Hist. Rer. Nat. Bras., 214).

III. NAMES SUGGESTED BY VOICE.

In this group, and in the ones that follow, the vernacular names are more specific in their nature, indicative of some peculiar feature or habit of a species. Bird voices have been embodied from the earliest times in various expressive syllables which have given rise to a variety of names. "Cuckoo" was one of these, and in like manner "Wren," "Crow" and other bird names of the Old World. The babble of our voluble Chat, as we have seen, undoubtedly led Catesby to ally the bird with a group of very different species. In America the colonists soon found names by which to designate a number of birds from peculiarities in their vocal performances. Latham speaks of the "Phœbe-bird" (*Sayornis*

fuscus), unquestionably given him by some transatlantic correspondent. Our name "pewee" is given "pewit" by Bartram. Wilson named the "Wood Pewee" (*Contopus virens*) from its voice and its habitat.

The older writers give "Rice-bird" as the chief caption of *Dolichonyx oryzivorus* (Catesby, I, 14) and Bartram calls the male "the pied rice bird." Wilson calls it "Rice bird," but mentions its other names — "Boblink" and "Reedbird." Nuttall, as a good New Englander, gives "Bob-o-link" as its principal name, and Barton, in his 'Fragments,' has "Bob-Lincoln." I find this last title also in a sketch of the English writer William Hazlitt (1785). These are the earliest references I can find to this song name of the bird which appears to have been early in use throughout New York and New England.

Among the current specific appellations of certain Sparrows some recent changes are noteworthy.

The "Yellow winged Sparrow" of Wilson is now the "Grasshopper Sparrow," the first allusion to its grasshopper-like notes being, as far as I can find, in Coues's 'Birds of the Northwest' (page 133). We owe the attractive name of "Vesper Sparrow" to John Burroughs (Wake Robin) which has superceded the older "Grass finch" of Pennant and Gmelin and the "Bay-winged Finch" of Wilson. The "Chipping Sparrow" is through Wilson from the earlier "little house sparrow or chipping bird" of Bartram. "Song Sparrow" unquestionably originated through Wilson, as also the specific title *melodia*. Catesby (I, 34) figures and describes "The Towhe-bird" (*Pipilo erythrophthalmus*). Wilson speaks of its name in Pennsylvania as "Chewink." "Towhee" is a later form of the word by adding an additional "e." "Swamp Robin" and (in Virginia) "Bulfinch" are other names mentioned by Wilson.

"Pipit" is an old English name applied to the Titlarks (*Anthus*) and is derived through "peep" from "pipe", imitative of the bird's note.

Catesby calls the Mockingbird (*Mimus polyglottos*) "The Mock Bird," though Bartram gives it its modern form. "Catbird" appears as such in Catesby (I, 66) and Bartram adds "Chicken bird" as a synonym (Travels, 290). "Chickadee" as a general

imitative vernacular name for the species of *Parus* I find first in Audubon. The name "Veery," given to the Tawny Thrush (*Turdus fuscescens*) in imitation of its note, is first used as a synonym by Nuttall.

"Warbler," as a general term for small song birds of the Old World family Sylviidæ, has come down from a word in several of the old European tongues (Old French, Old High German, Middle English — *Werbler*, *Werbelen*), meaning to whirl, run round, warble, as a bird (Skeat). In its special application to the species of *Sylvia*, which we owe to Pennant (1773), it included the American Warblers (Mniotiltidæ) which were later separated as a distinct family (Sylvicolidæ) under the title of "Wood Warblers." "Wood Warbler," however, has not prevailed and "Warbler" continues to be the current vernacular for the various species of this characteristic American family, though, as we are well aware, the name belies the insect-like notes, drawling monotones, lispings, and wheezing performances of the majority of the species. A few do really warble in the accepted sense of the term (*Geothlypis*), but most speak in a tongue peculiarly their own.

Kalm (Travels, Eng. Trans., II, 151) speaks of "Whip-poor-will" as the English name of *Antrostomus vociferus*. A confusion appears in Bartram (Travels, 292), who has it "Night hawk or Whip-poor-will." *Antrostomus carolinensis* is called by Bartram (292) "the great bat, or Chuck Wills Widow." "Night-hawk" is given by Wilson, though this species (*Chordeiles virginianus*) appears to have been described by Catesby under the name of "The Goat-sucker of Carolina" (I, 8).

Colinus virginianus has long proclaimed his proper title of "Bob-White," which has now become the accepted name of the species, superceding the older and less distinctive terms of "quail" and "partridge."

IV. NAMES SUGGESTED BY SOME PECULIAR HABIT OR HABITAT.

"Flycatcher" is a name of obvious application given to an Old World group of birds. From the peculiar habits of certain American species the term "Tyrant Flycatchers" has become current. The "Kingbird" is first so-called by Bartram. Catesby figures the

species as "The Tyrant," whence the name of general application. Wilson speaks of its name in Maryland as the "Field Martin," and "Bee Martin" is another name in certain localities.

"Gnatcatcher" is a name that first appears in Audubon, from the Swainsonian genus *Culicivora*. The species (*Poliophtila cærulea*) was originally "the little bluish grey wren" of Bartram (Travels, 291), and later the "Small Blue Grey Flycatcher" of Wilson (A. O., II, 164)."

Several species of Warblers early received names indicative of peculiar habits. The Worm-eating Warbler (*Helminthos vermivorus*) of Wilson and later authors was originally "The Worm-eater" (Edwards, Gleanings), from Bartram; also Latham and Pennant from the same source. The Pine-creeping Warbler (*Dendroica vigorsii*) of Wilson was the "Pine Creeper" of Catesby (I, 61). Edwards (Gleanings, 92) quoting a letter from Bartram says of *Seiurus aurocapillus* that it "builds its nest upon the ground, and always chooses the south side of a hill; that it makes a hole in the leaves, like a little oven, and lines it with dry grass," etc. This is the first reference I have found of the familiar vernacular "Oven-bird," although Edwards calls the species "Golden-crowned Thrush." "Water Thrush" and "Wagtail" were names early given to the other species of the genus, and Pennant speaks of one as the "New York Warbler" (Arct. Zoöl., II, 308) whence its old specific name of *noveboracensis*. The vernacular "Myrtle Bird" first appears in Nuttall, hence probably "Myrtle Warbler" of authors, though early accounts speak of the bird's fondness for the berries of the Wax Myrtle (*Myrica*). Catesby calls it "The Yellow-rump" (I, 58) and Edwards (Glean., VI, pl. 298) "The Golden-crowned Flycatcher." The Magnolia Warbler was found by Wilson "among the magnolias, not far from fort Adams on the Mississippi." He called it the "Black and Yellow Warbler, *Sylvia Magnolia*" (A. O., III, 63), hence "Magnolia Warbler" of later authors. *Dendroica palmarum*, the "Palm Warbler" of Latham (Synop., II, 491), is the "Yellow red pole" of Edwards (*Parus aureus vertice rubro* of Bartram) and the "Yellow red-poll Warbler" of Wilson. Wilson called *Dendroica discolor* the "Prairie Warbler" from the open tracts of Kentucky where he first found it.

Of the Sparrows several species have received names indicative

of habitat. The "little field sparrow" of Bartram became the "Field Sparrow" of Wilson and later authors ("Bush Sparrow" of Burroughs). Wilson first bestowed the vernacular title of "Swamp Sparrow" upon *Melospiza georgiana*, though it was known to Bartram as "The reed sparrow." In like manner the name "Seaside Finch" was given by Wilson to *Ammodramus maritimus* from habitat (A. O., IV, 68). *Junco hyemalis* was called "Snowbird" by the early settlers from the fact of its appearance in the late autumn and at the onset of winter in the coastal plain region (Catesby, Kalm, Wilson, and later authors). "Junco" is a comparatively late adoption in order to avoid confusion with the Snow Bunting — *Plectrophenax nivalis*.

The "House Wren" is so called by Bartram (Travels, 291) and the "Marsh Wren" likewise (the latter most likely referring to the long-billed species). Wilson, correcting earlier errors, gave the title "Winter Wren" to *T. hiemalis*.

"Chimney Swallow" is an old name for the "Chimney Swift" (*Chaetura pelagica*) and is given as such by Kalm, Bartram and early writers.

"*T. melodes* — the wood thrush" is so called by Bartram (Travels, 290). Wilson named the "Hermit Thrush" (*T. solitaria*, A. O., V, 95) from its habitat and its retiring habits.

The Cowbird was "The Cow-pen Bird" of Catesby (I, 34) and likewise of Audubon, and the "Cow Bunting" of Wilson. "Meadow Lark" first appears in Wilson. Bartram calls it "The great meadow lark," and Catesby "The Large Lark" (I, 33). Pennant, nearer the truth, calls it the "Crescent Stare" (Arct. Zoöl., 192). Wilson also speaks of "Old field lark" as its common name in Virginia. The "Shore Lark" is so called by Pennant. Catesby calls it "The Lark" (I, 32), Bartram the "Skylark," and Wilson the "Horned Lark."

Several of our American Swallows received names indicative of habit or habitat — "Barn Swallow" originated as a specific title with Barton (*horreorum*, Fragments, 1799). It was the "House Swallow" of Bartram. The Bank Swallow is the "Bank Martin" of Bartram. "Cliff" and "Eave" Swallow are names of *Petrochelidon lunifrons* according to the particular nesting site adopted by this species. I have failed to find any early reference to the name

"Tree Swallow" for *T. bicolor* — the "White-bellied Swallow" of earlier authors. It appears to have come into use at a comparatively late period.

Bartram speaks of *Ampelis cedrorum* as "Crown Bird" or "Cedar bird" (Travels, 290), the latter its current name.

V. NAMES SUGGESTED BY COLOR OR OTHER EXTERNAL FEATURE.

A large number of our American bird names owe their origin to color or to some conspicuous external feature. The "Great crested Flycatcher" of Wilson is the "Great Crested Yellow bellied Flycatcher" of Bartram and "The Crested Flycatcher" of Catesby, (I, 52). The word "Great" evidently originated with Bartram. "Baltimore," as applied in the vernacular to *Icterus galbula*, was first used in ornithological literature by Catesby — "The Baltimore-Bird" (I, 48) — the name being derived from its color pattern, that of the livery of the Calverts (Lord Baltimore). Bartram calls it "Baltimore bird or hang nest." The specific appellation "Orchard" appears first to have been bestowed by Wilson upon *Icterus spurius* which was the "Bastard Baltimore" of Catesby (I, 49). Wilson goes to some length to set things right concerning this species. "Scarlet" as applied to the Tanager (*Piranga erythromelas*) appears first in Edwards (Gleanings, 343) as the "Scarlet Sparrow." Pennant calls this species "Canada Tanager." The "Summer Redbird" is so called and figured by Catesby (I, 56). Bartram speaks of it as the "Sandhill redbird of Carolina." Among the Sparrows and Grosbeaks there are a number of species the names of which have a color origin. "Red poll," given to a species of *Acanthis*, appears as the "Lesser red-headed Linnet" and "Lesser Redpole," of Ray and Pennant. "Linnet" is an ancient name common in several European languages and is in reference to the fondness of these birds for the seeds of the flax (*Linum*). Bartram undoubtedly refers to this species (*Acanthis linaria*) under the name of "hemp bird." "Purple" as applied to *Carpodacus purpureus* first appears in Catesby's work (I, 41) as "Purple Finch" and is a monumental witness of an inability to properly discriminate either between two very different shades of

color or in the use of the right word. "White-throated Sparrow" is so called by Edwards from a drawing of the species sent him by Bartram who speaks of it in his 'Travels' as "The large brown white throat sparrow." *Zonotrichia leucophrys* is the "White-crowned Bunting" of Pennant. The vernacular of *Passerella iliaca* has been contracted from the earlier "Fox-coloured" (or "colored") to simple "Fox Sparrow." Bartram calls it "The red, or fox coloured ground or hedge sparrow." Barton, in his 'Fragments,' speaks of this species' name in New York as "the Shepherd" (Fragments, 15). Our modern "Cardinal" is undoubtedly of French origin. Catesby gives it its English title of "Red-bird" and also "Le Cardinal" (I, 38). It is "The red-bird or Virginia Nightingale" of Bartram and other early writers. Catesby figures *Guiraca cærulea* as "The Blew Grosbeak" (I, 39). "Rose-breasted" (Wilson) may be traced to *Le Rose Gorge* of Buffon and "Red-breasted Grosbeak" of Pennant. *Passerina cyanea* is "The Blew Linnet" of Catesby (I, 45), who further alludes to it as the "Indigo-bird of Americans." The "Painted Finch" (*P. ciris*) is so called by Catesby, and Bartram likewise adds its other title of "Nonpareil." "Lazuli" was bestowed upon *P. amœna* by Say (Long's Exp., II, 47, 1823).

Pennant first uses the name "Black-throated Bunting" for *Spiza americana*, but Bartram mentions this species under the title "*Calandra pratensis*, the May bird" (Travels, 291). "Dickcissel," its modern name, appears to have originated through Mr. Robert Ridgway from Middle West localities (Coues, Birds of the North West, 166). Wilson borrowed the term "sharp-tailed" for *Ammodramus caudacutus* from Turton (Syst., 562). "Lark," as applied to two species of Fringillidæ — *Chondestes grammacus* and *Calamospiza melanocorys* — was bestowed upon these different birds, in the one case by Say and in the other by Townsend, in view of their lark-like appearance and habits.

Among the Warblers we have a host of color names. "Mourning Warbler" we owe to its discoverer Wilson. The Summer Warbler or "Yellow Warbler" (*Dendroica aestiva*) was "the Yellow Titmouse of Catesby (I, 63), "the summer Yellow-bird" of Bartram, the "Yellow-poll" of Latham and Pennant and the "Blue-eyed Yellow Warbler of Wilson. Say first described the

Orange-crowned Warbler (*Helminthophila celata*) (Long's Exp., 1823). *Mniotilta varia* was the "Black and White Creeper" of Edwards (Glean., Vol. VI, received from Bartram who gave it its name). In his 'Travels' Bartram calls it the "blue and white striped or pied creeper" (p. 289). Of the Prothonotary Warbler Pennant (Arct. Zoöl., II, 30) says: "Inhabits *Louisiana*. Called there *le Protonotaria*; but the reason has not reached us." Probably in allusion to the vestures of that office. Many species of warblers were earlier known by the various names of "flycatcher," "titmouse," and "creeper" according to their peculiar habits, the specific vernacular being mainly in relation to color. *Dendroica caerulescens* was the "Blue Flycatcher" of Edwards (Glean., pl. 252 — received from Bartram); the "Black-throat" of Pennant (Arct. Zool., II, 285); the "Black-throated Warbler" of Latham, and the "Black-throated Blue Warbler" as first applied by Wilson. Wilson first named the "Cerulean Warbler." The "Black poll Warbler" appears as such in Latham and Pennant, "poll" or "pole" being an early name for "head" as in our "poll tax." The Yellow-throated Warbler (*D. dominica*) was "The Yellow-throated Creeper" of Catesby (I, 61). The "Blue Winged Yellow Warbler" (*Helminthophila pinus*) was formerly confused with the "Pine creeper" of Catesby (*D. vigorsii*), hence *pinus* as applied to this species of *Helminthophila*. Its vernacular is a clear translation by Wilson of Bartram's "*Parus aureus alis ceruleis* — Blue winged yellow bird." In like manner *H. chrysoptera* was the "*Parus alis aureus*" of Bartram, the "Golden-winged Flycatcher" of Edwards (from Bartram), and the "Golden-winged Warbler" of Wilson and later authors. Wilson first bestowed the names "Bay-breasted" and "Chestnut-sided" upon *D. castanea* and *D. pensylvanica*. The former was Bartram's "little chocolate breast titmouse" (Travels, 292) and the latter his "golden crown flycatcher." This last species, also, was the "Red-throated Flycatcher" of Edwards and the "Bloody-side Warbler" of Turton as a result of Edwards's badly colored plate. *D. virens* was the "Green Black-throated Flycatcher" of Bartram and the "Black-throated Green Flycatcher" of Edwards (Glean., VI, pl. 300, from Bartram). The "Hooded Warbler" (*Sylvania mitrata*) is figured by Catesby under the name of "The Hooded Titmouse" (I, 60).

"Black-cap Titmouse" is Bartram's name for the species (*Parus atricapillus*) and probably also its near relative *P. carolinensis*. The "Olive-backed Thrush" was first so-called by Giraud (Birds of Long Island, 1844, 92). *T. fuscescens* was called "Tawny Thrush" by Wilson, "Bluebird" is an early name. The species is figured by Catesby (I, 47) as "The Blew-Bird." Pennant called it the "Blue-Backed Red-Breast" (Arct. Zool., II, 91). *Lanius ludovicianus* was called the "Logger head Shrike" or "Loggerhead" by Wilson, as its common name in the South.

Most of our species of Woodpeckers early received their names from color markings or other external feature, as "red-headed," "yellow-bellied," "golden-winged," "pileated," "downy," "hairy," "ivory-billed," etc. The word "Flicker," as a vernacular of *Colaptes auratus*, probably originated from the bird's call notes. It is referred to by Wilson.

VI. NAMES SUGGESTED BY LOCALITY (PLACE-NAMES) OR IN HONOR OF SOME PERSON.

A curious misapprehension as to the significance of the current English name of *Ammodramus sandwichensis savanna* seems to exist in ornithological literature as revealed by its orthography. Wilson distinctly refers to the city of Savannah as the locality where he states he first discovered the species (A. O., III, 55) and he so spells its name in the English title. Its specific name, however, he gives as "savanna." In our current literature this last appears as the method of spelling the bird's name in English, which is clearly misleading. In its general application "savanna" might be very appropriate in view of the species' habitat, but Wilson intended it otherwise and "Savannah Sparrow" is the proper form of the English name.

The term "Evening" in the vernacular of *Hesperiphona vespertina* as given to the species by Cooper (Annals N. Y. Lyceum Nat. Hist., I, 220) conveys, as does the scientific name, the idea of the west or the place of sunset.

Geothlypis trichas was called by Bartram "The olive coloured yellowthroated wren" (Travels, 292). Of the bird's present English name I find the following interesting reference in Edward's

Gleanings (Vol. V, 57): "J. Petiver, in his *Gazophylacium*, plate vi, has given the figure of a bird, which I believe to be the same with this; for which reason I continue the name he has given it... '*Avis Marylandica gutture luteo*, the Maryland Yellow-throat. This the Rev. Mr. H. Jones sent me from Maryland'." Edwards later received the bird from Bartram with a drawing "very neatly and exactly done, by Mr. William Bartram, of Pennsylvania, who hath enabled me to give a further account of this bird, for he says, it frequents thickets and low bushes by runs (of water, I suppose, he means) and low grounds; it leaves Pennsylvania at the approach of winter, and is supposed to go to a warmer climate."

To Wilson we owe the place-names of five of our species of Warblers — the Kentucky, Connecticut, Tennessee, Nashville, and Cape May — from the State or locality of the first capture by him of the species in question. John Cassin named a species of Vireo "Philadelphia" after the city in the neighborhood of which he obtained his type specimen.

Thryothorus ludovicianus obtained its vernacular through Bartram — "(regulus magnus) the great wren of Carolina" (Travels, 291). This Wilson transposed into "Great Carolina Wren."

The "Blackburnian Warbler" is so called by Pennant and Latham, and is evidently named in honor of the owner of the Blackburn Museum in London.

A number of our birds acquired their names in the first half of the last century in honor of certain persons known to their describers — as Lincoln's, Henslow's, LeConte's, and Harris's Sparrows; Townsend's, Audubon's, Swainson's, and Bachman's Warblers; Lewis's Woodpecker; Clark's Nutcracker; Steller's and Woodhouses's Jays, and many others of early and recent date.

"Louisiana" as applied to the species of Tanager (*Piranga ludoviciana*) and to the Water-Thrush (*Seiurus motacilla*) refers to the region embraced in the Louisiana Purchase, not to the present State of that name. "Florida," "Canada," "California," "Hudsonian" and other regional names have in like manner been applied to certain species, as "Florida Jay," "Canada Jay," "Canadian Warbler," "California Woodpecker," "Hudsonian Chickadee," and so forth.

The matter as presented in the foregoing sketch does not pretend to list all of the species and varieties of North American land birds. It is only a sketch or outline of a most attractive subject and was written partly for the purpose of gathering together what knowledge we have of the history and origin of our more familiar bird names.

SUMMER BIRDS OF IRON COUNTY, MICHIGAN.

BY ELIOT BLACKWELDER.

THE birds in the following list were seen in Iron County, Michigan, and adjacent portions of Dickinson and Menominee Counties during June, July and August, 1908. The writer was engaged in geological surveying, in the course of which he spent nearly three months in the woods and traversed the region somewhat thoroughly in different directions. The notes on birds were kept in the form of a daily record, or a "roll-call," as we often referred to it in the field.

The region is one of low hills and plains of glacial drift, through which small rocky knobs protrude here and there. The entire district was once heavily forested, but the coniferous woods have been largely cut off and the remaining "slash" has been repeatedly burned. Where fires have not been excessively damaging, the original forest is being replaced by thickets of birch and poplar with dense undergrowth of blackberry bushes and other shrubs. The clay ridges, such as the glacial moraines and drumlins, were clad with dense forests of hard maple, birch and hemlock. Only a small portion of this hardwood forest has been lumbered, although the rate of cutting is constantly increasing. Where the forests are untouched they are generally open below,—the large trees, with their dense shade, preventing the growth of underbrush. Where the timber has been removed, however, the second growth is hazel and maple brush with dense berry bushes. The pine forests were largely on the sand plains, and those localities have

generally been burned so often that even the sod and herbage has been killed, leaving a relatively barren waste, with a few charred stubs rising above it. Scattered throughout the area there are many swamps, bristling with cedar and tamarack, only small portions of which have as yet been cut by the lumbermen. Many scattered lakes connected by crooked streams, complete the list of topographic features. Around settlements there are, of course, cleared farms and orchards, but these cover only a small part of the district.

The bird population may be readily classified into several societies, which are relatively distinct from one another. It would be possible to refine this classification considerably, but the data gathered last summer hardly make this advisable.

In the open hardwood forests birds are not abundant. The characteristic species there are the Red-eyed Vireo, the Wood Pewee, the Hermit and other Thrushes, the Rose-breasted Grosbeak, an occasional Scarlet Tanager, and several warblers of the genus *Dendroica*. While walking through these open park-like woods, one is seldom out of hearing of the peaceful notes of the Vireo and Pewee.

It is doubtful if any considerable area of the original pine forest remains in the district. At least our zigzag travels did not happen to lead us into any such. What its bird fauna may have been can not therefore be stated here. In the tangles of brush and charred stumps that mark the trail of the lumbermen through either the hard wood or the coniferous forests, birds are generally abundant. The most characteristic denizen of these wastes is the White-throated Sparrow, whose plaintive note is well known to everyone who has had experience in the northern woods. In the brushy tangles, the Towhee, the Junco, and the Winter Wren are characteristic birds. Where some of the original trees are left, the Flicker, the Robin, and the Ruffed Grouse are commonly met with. The Pileated Woodpecker, doubtless originally an inhabitant of the great pine forests, may now be found occasionally in those parts of the lumbered area where fires have not been too destructive. The Northern Raven is another not uncommon member of this society.

The dense cedar and tamarack swamps are generally silent places and seem to have but few bird inhabitants. Only the Chick-

adee and Kinglets are characteristic, although the Canada Nuthatch is occasionally found in the same somber thickets.

Along the lakes and rivers a very different but tolerably numerous bird population makes its home. Perhaps the most common of all the river birds is the Kingfisher, for although they are almost always found singly or in pairs, scarcely any stretch of river or lake shore is without them. An occasional Blue Heron may be seen stalking along the banks of the more sluggish streams and lakes; and wherever there are sandbars or beaches the Spotted Sandpiper is often encountered. The Osprey was observed on one or two occasions and may be more common than is apparent from our record. On the lakes and ponds the Loon is by all means the most characteristic bird, though there are never many in one locality. Along swampy borders the Bittern and doubtless other marsh birds are characteristic. The Horned Grebe is another member of the lake fauna but seems not to be common in summer. Several species of ducks were observed but the only one positively identified, the Red-breasted Merganser, frequents chiefly the rivers. In summer, pairs of old birds with broods of half-grown young may often be chased for long distances on swift streams from which the fledglings find it impossible to escape by flying.

In the cleared areas and farms, and around the towns, birds are more common than elsewhere, but they are probably less typical of this particular region. In a sense they must be considered as invaders from regions less densely forested than this district was originally. In the cities there is the inevitable House Sparrow, and in his vicinity but few other birds care to remain. Around the farms the Barn Swallow, the Purple Martin, the Cowbird, the Song and Field Sparrows, and the Phoebe, are familiar birds. The Indigo Bunting finds its most congenial home along road-sides through the woods; and the Crow, although it prefers the woods, does not seem to go far from the settled districts. On the open fields the Horned Lark is among the recent immigrants, and the Meadowlark is not uncommon, although not the characteristic bird it is farther south. Here also the Sparrow Hawk and Buteos may be found occasionally.

Annotated List.

1. **Colymbus auritus.** HORNED GREBE.—A single pair of grebes was seen early in August on the upper course of the Menominee River.

2. **Urinator immer.** LOON.—One of the characteristic birds of the many lakes. On the small bodies of water only single pairs were seen and they are rarely numerous at any one place.

3. **Mergus serrator.** RED-BREASTED MERGANSER.—Birds with broods of young were frequently encountered along the large streams such as the Michigamme and Menominee Rivers.

4. **Botaurus lentiginosus.** AMERICAN BITTERN.—Doubtless a common resident of the open cat-tail marshes which border many of the lakes. The birds are not often seen, however, unless their special haunts are invaded.

5. **Ardea herodias.** GREAT BLUE HERON.—Single birds are seen not infrequently, especially along the larger rivers.

6. **Actitis macularia.** SPOTTED SANDPIPER.—This sandpiper is the only common representative of the shore birds and it is confined to those stretches of river banks and lake shores where there are sand bars or mud banks. Since these conditions are not often fulfilled in this part of northern Michigan, the bird is not particularly common.

7. **Oxyechus vociferus.** KILLDEER.—The Killdeer was seen occasionally in low pastures in the better settled farming districts. Elsewhere there is but little suitable territory for it.

8. **Bonasa umbellus.** RUFFED GROUSE.—A common denizen of portions of the hard wood forests which are well provided with undergrowth and are sufficiently remote from towns.

9. **Accipiter velox.** SHARP-SHINNED HAWK.—A few of these small hawks were seen in August and September in the more open country, in the vicinity of towns and villages.

10. **Buteo borealis.** RED-TAILED HAWK.—A common species in the open country. Not a few of them frequent the plains once forested with pines, but now transformed by repeated fires into barren wastes.

11. **Buteo platypterus.** BROAD-WINGED HAWK.—Two of these hawks were seen at sufficiently close range to be recognized; one on the Menominee River in August, and another on the upper course of Iron River in September.

12. **Falco sparverius.** AMERICAN SPARROW HAWK.—Sparrow Hawks are fairly common on the burnt-over plains and in the neighborhood of farms.

13. **Pandion haliaëtus carolinensis.** AMERICAN OSPREY.—A few Ospreys nest along the larger rivers where they are wooded and not bordered by settlements. Several were seen on the lower Michigamme River.

14. **Strix varia.** BARRED OWL.—Large owls, believed from their note to belong to this species, were heard repeatedly in the dense hardwood forests in southeastern Iron County in July.

15. **Ceryle alcyon.** BELTED KINGFISHER.—The Kingfisher is one of the characteristic birds of the river banks, but is somewhat less numerous about the lakes.

16. **Dryobates villosus.** HAIRY WOODPECKER.—Not very common. It was clearly recognized on two occasions in more open portions of the hardwood forests.

17. **Dryobates pubescens.** DOWNY WOODPECKER.—The commonest of the woodpeckers in summer. It is generally found in more open parts of the maple and birch woods.

18. **Sphyrapicus varius.** YELLOW-BELLIED SAPSUCKER.—A few were seen in the hardwood forests in July and early in September.

19. **Ceophloeus pileatus.** PILEATED WOODPECKER.—This largest of the woodpeckers of the northern States is still fairly common in the deeper recesses of the woods away from towns. It seems to prefer the edges of the balsam and cedar swamps when surrounded with forests of hardwood and hemlocks. The bird itself may be recognized by its large size and its sweeping undulating flight. It is more often heard than seen, for its rappings on tall dead stubs are easily audible at a distance of nearly a mile, if not more.

20. **Melanerpes erythrocephalus.** RED-HEADED WOODPECKER.—This woodpecker is less common than in the settled region farther south. We found it generally in the open burned-over areas where scattered dead stumps are numerous.

21. **Colaptes auratus luteus.** FLICKER.—The Flicker is one of the characteristic birds of the partly cleared lands and around the settlements.

22. **Antrostomus vociferus.** WHIP-POOR-WILL.—Heard several times in August and July in the thick hard-wood forests along the Michigamme River.

23. **Chordeiles virginianus.** NIGHTHAWK.—Nighthawks are abundant in midsummer throughout the district. Large numbers of them may be seen scattered overhead in the afternoon and early evening. It is at this time that their peculiar bellowing note may be heard as they dive hundreds of feet from the heights they have reached in soaring.

24. **Chætura pelagica.** CHIMNEY SWIFT.—Fairly common throughout the district but especially in the settled portions.

25. **Archilochus colubris.** RUBY-THROATED HUMMINGBIRD.—A few Hummingbirds were observed near farms and in open glades in the hardwood forest where there were attractive flowers.

26. **Tyrannus tyrannus.** KINGBIRD.—Common only in the cleared and settled portions of the district.

27. **Sayornis phœbe.** PHŒBE.—This is a bird preëminently of the farms and road-sides, rather than of the deep forest.

28. **Myiochanes virens.** WOOD PEWEE.—One of the most characteristic birds of the deep hardwood forest, especially where the trees are large and high, and the forest is free from undergrowth.

29. **Empidonax minimus.** LEAST FLYCATCHER.—Apparently not common here in summer. We saw one in the hardwood forest in August.

30. *Otocoris alpestris praticola*. PRAIRIE HORNED LARK.—Evidently an immigrant from the prairie country to the south. A few were seen on the barren burned plains but favorable localities are still few, and must have been quite lacking a generation ago.

31. *Cyanocitta cristata*. BLUE JAY.—A fairly abundant bird, particularly in the hardwood forest and around settlements.

32. *Perisoreus canadensis*. CANADA JAY.—Rare in summer. A few were seen early in September in the second-growth scrub pines, in the north-western part of Iron County.

33. *Corvus corax principalis*. NORTHERN RAVEN.—The Raven, like the Pileated Woodpecker, is a bird of the deep recesses of the forest. It seems to be confined to no particular situation and is not common anywhere, although single pairs are seen at frequent intervals.

34. *Corvus brachyrhynchos*. AMERICAN CROW.—The Crow is much less common here than farther south. It seems to prefer the cleared portions of the district around the edges of the forest.

35. *Molothrus ater*. COWBIRD.—A common bird around the farms and pastures, but not elsewhere.

36. *Agelaius phoeniceus*. RED-WINGED BLACKBIRD.—Characteristic of the cat-tail marshes bordering the lakes.

37. *Sturnella magna*. MEADOWLARK.—Like the Horned Lark and several other species, this is apparently a recent immigrant. We saw but few and those only in the cultivated parts of the district.

38. *Scolecophagus carolinus*. RUSTY BLACKBIRD.—A few seen, chiefly along road-sides in the vicinity of farms.

39. *Quiscalus quiscula æneus*. BRONZED GRACKLE.—Not particularly common. We saw a few in the wooded plains northeast of Crystal Falls in August.

40. *Carpodacus purpureus*. PURPLE FINCH.—A single small flock was seen in July in the hemlock woods on the western edge of Dickinson County.

41. *Astragalinus tristis*. AMERICAN GOLDFINCH.—Common almost everywhere, especially in the cleared portions.

42. *Spinus pinus*. PINE SISKIN.—The Siskins may be seen in small bands in the latter part of the summer, and are especially characteristic of cedar swamps.

43. *Passer domesticus*. ENGLISH SPARROW, OR HOUSE SPARROW.—As everywhere, the House Sparrow is confined to the towns and villages, but has made its way all over the district wherever conditions are suitable.

44. *Poecetes gramineus*. VESPER SPARROW.—Found throughout the district along road-sides and in clearings.

45. *Zonotrichia albicollis*. WHITE-THROATED SPARROW.—Probably the most characteristic single species of the region. The plaintive whistle of the "Peabody" Bird is heard everywhere except in the deepest solitudes of the woods and swamps. Often a belated singer may be heard long after dark, when other sounds are still.

46. *Spizella passerina*. CHIPPING SPARROW.—Seen on several occasions in the brushy clearings.

47. **Spizella pusilla.** FIELD SPARROW.—Common only in the more settled regions where there are open fields and hedges.

48. **Junco hyemalis.** SLATE-COLORED JUNCO.—A characteristic bird of the brushy clearings and isolated farms.

49. **Melospiza melodia.** SONG SPARROW.—Scattered throughout the district, but commonest along roads through partly cleared hardwood.

50. **Pipilo erythrophthalmus.** TOWHEE.—The Towhee finds a suitable habitation in the abundant brushy clearings throughout the region.

51. **Zamelodia ludoviciana.** ROSE-BREADED GROSBEAK.—This is confined to the open birch and maple forest, and there it is one of the characteristic birds.

52. **Passerina cyanea.** INDIGO BUNTING.—Tolerably common along the brushy road-sides through hardwood forests and along the edges of the settled districts.

53. **Piranga erythromelas.** SCARLET TANAGER.—The Tanager is found with the Grosbeak in the lofty hardwood forests, but is considerably less common.

54. **Progne subis.** PURPLE MARTIN.—Common in the smaller towns, but not often seen elsewhere.

55. **Hirundo erythrogastra.** BARN SWALLOW.—Characteristic of the cultivated regions where there are farms and bridges.

56. **Riparia riparia.** BANK SWALLOW.—The Bank Swallow is found wherever there are suitable clay banks. These are not particularly numerous, however, except along some of the larger rivers.

57. **Bombycilla cedrorum.** CEDAR WAXWING.—Small companies of Waxwings are often seen or heard in the forests, where they seem to be confined to no particular situation.

58. **Vireosylva olivaceus.** RED-EYED VIREO.—There is no sound more familiar in the generally silent recesses of the hardwood forest than the quiet warble of this vireo.

59. **Mniotilta varia.** BLACK AND WHITE WARBLER.—In midsummer a few were seen in the hemlock and maple forests.

60. **Dendroica æstiva.** YELLOW WARBLER.—Common among the willows and other undergrowth along the river banks.

61. **Dendroica striata.** BLACK-POLL WARBLER.—

62. **Dendroica virens.** BLACK-THROATED GREEN WARBLER.—Both of these warblers were seen in July among the hemlocks and maple woods. Doubtless there are more species but they were difficult to see clearly through the leaves.

63. **Seiurus aurocapillus.** OVEN-BIRD.—An abundant bird in the damp portions of the hardwood forests. Its loud crescendo whistle is one of the characteristic sounds in such places.

64. **Seiurus noveboracensis.** WATER-THRUSH.—Fairly common among the willows and shrubs along the river banks.

65. **Geothlypis trichas.** MARYLAND YELLOW-THROAT.—Frequents especially the edges of lakes where there is undergrowth with willows.

66. *Wilsonia canadensis*. CANADIAN WARBLER.— Seen only late in August and therefore perhaps not a summer resident.

67. *Setophaga ruticilla*. AMERICAN REDSTART.— Like the Dendroica, the Redstart is not uncommon in the hardwood forest.

68. *Dumetella carolinensis*. CATBIRD.— Decidedly uncommon, considering the inviting character of the brush heaps and undergrowth which are scattered throughout the district. Not more than a dozen were seen during the entire summer.

69. *Toxostoma rufum*. BROWN THRASHER.— Rather more common than the last, but still not abundant.

70. *Troglodytes aëdon*. HOUSE WREN.— A single wren of this species was seen in recent clearings in the hardwood forest in August.

71. *Nannus hyemalis*. WINTER WREN.— The Winter Wren seems to be the common member of the family in this region, and is frequently seen dodging in and out among brush heaps and wood piles.

72. *Sitta canadensis*. RED-BREASTED NUTHATCH.— Fairly common, especially among the balsams and hemlocks on the borders of swamps. Its relative, the Carolina Nuthatch, was not seen.

73. *Penthestes atricapillus*. CHICKADEE.— Hardly a day can be spent in the woods without seeing a few Chickadees. They seem to prefer the edges of the cedar swamps but are not uncommon in the hardwood forest as well.

74. *Regulus satrapa*. GOLDEN-CROWNED KINGLET.—

75. *Regulus calendula*. RUBY-CROWNED KINGLET.— Occasionally seen in the midst of the cedar swamps. The Ruby-crowned Kinglet is the more common of the two. In July its delicate and ecstatic little song may be heard if one is fortunate enough to be close by and not too disturbing.

76. *Poliophtila caerulea*. BLUE-GRAY GNATCATCHER.— A few seen with the kinglets in July.

77. *Hylocichla mustelina*. WOOD THRUSH.—

78. *Hylocichla fuscescens*. WILSON'S THRUSH.—

79. *Hylocichla ustulata*. OLIVE-BACKED THRUSH.—

80. *Hylocichla guttata pallasii*. HERMIT THRUSH.— The thrushes are all denizens of the hardwood forests, especially where undergrowth is not thick. They seem to be rather more common in the damper portions than on higher ground. Of the four, the Hermit Thrush is perhaps the most common, and its beautiful song is one of the familiar sounds of the deep woods and is heard especially toward evening.

81. *Planesticus migratorius*. ROBIN.— Common not only along roads and about the farms, but in the more open portions of the woods far from settlements.

82. *Sialia sialis*. BLUEBIRD.— Less common than the last, with which it is often associated. We found it chiefly in open burned areas in the forest where it seems to find nesting sites in holes in the charred stumps.





YELLOW-HEADED BLACKBIRD STUDIES.

Male in 'straddle-pose' on the top of the old, dry reed stems.

A STUDY OF A BREEDING COLONY OF YELLOW-
HEADED BLACKBIRDS; INCLUDING AN ACCOUNT
OF THE DESTRUCTION OF THE ENTIRE
PROGENY OF THE COLONY BY SOME
UNKNOWN NATURAL AGENCY.¹

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Plates V-XVI.

IN an effort to secure exact and detailed information in regard to the nidification of the Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*), a nesting colony of these birds was subjected by the writer and an assistant to a continuous daily inspection for a period of thirty-two days, from May 13 to June 13 inclusive, 1901. The locality selected was a clump of quill-reeds (*Phragmites phragmites*) about an acre in extent, isolated by open marsh from a more extensive growth of reeds bordering a large slough which forms part of the preserve of the Long Meadow Gun Club, lying in the bottom-land of the Minnesota River and distant ten miles from the city of Minneapolis, Minnesota. It was on the opposite side of the slough from the buildings of the Gun Club, accessible only by boat and in no way subject to intrusion by domesticated animals of any sort. Observations were begun on May 13, and from that date until June 13 the entire site was carefully examined once, and often twice, a day, with the exception of three days — May 16 and 28 and June 6 — when severe wind and rain storms made it impossible to reach the locality.² Each nest as it was found was marked by an inconspicuous numbered tag attached to the reeds

¹ Read in part before the American Ornithologist's Union in Cambridge, Mass., Nov. 18, 1908.

² A large part of the data forming the basis of this paper was secured through the patient and careful coöperation of Miss Mabel Densmore of Red Wing, Minn., who was quartered at the Gun Club and made the daily rounds of the Colony in the absence of the writer.

near by and as much out of sight as possible. A note book was kept and the notes entered daily on the spot under each nest number. The water throughout the clump of reeds varied in depth from six to eighteen inches. It was thus necessary to wade in making the rounds of the nests, but it was possible to get about without disturbing the vegetation greatly, or making any considerable noise, so that the birds soon became accustomed to the daily visitations and, for the most part, seemed little annoyed by the intrusions.

The spring of 1901 was somewhat backward, the weather having been rough and cold. Meadowlarks, Red-winged Blackbirds and Vesper Sparrows had arrived by the latter part of April. The first Lark Finches came May 1, just as the last of the early blossoming Nuttall's Pasque-flower (*Pulsatilla hirsutissima*) were fading on the prairie knolls, and the first of the marsh marigolds (*Caltha palustris*) were coming into bloom in the marshes below. On May 3 the first Yellow-headed Blackbirds were seen, all males except one. The edges of the sloughs were then just beginning to show green with the sprouting grass and willows. The Baltimore Oriole and the Rose-breasted Grosbeak came May 4, and the first Warbling Vireo was heard on the 5th. May 12 it was still cold — so cold that winter clothing out-of-doors and fires indoors were necessary for comfort. A 'white frost' was to be seen that morning and thin ice was said to have formed, but vegetation did not suffer to any appreciable extent. Many birds had arrived but there had been no distinct bird 'wave' as usual, the cold weather having interfered with the regular order of migration. Most of the trees were in small leaf. Willows were in full bloom, many staminate catkins having scattered. Sweet-flag and iris were just coming up. The water of the marsh was full of tadpoles. Many Mud-hens and Florida Gallinules had arrived and were to be seen feeding like chickens out in the bare slough. All day long on this date a large flock of Yellow-heads, made up entirely of males, fed, first among the rice stubble near shore, and, later (in the afternoon), in the pasture in front of the house. They seemed to find food among the broken rice stalks and the short grass, just what could not be determined by watching them. As the males sat about in the grass it was difficult at times to distinguish their saffron heads from the dandelion blossoms which grew abundantly where they were feeding. Late in the afternoon of the 13th the writer paddled



YELLOW-HEADED BLACKBIRD STUDIES.

Upper figure, general view of the quill-reed 'clump' in early June. Male Yellow heads standing guard on the tops of the old dead reeds.

Lower figure, showing the Wild Rice six or eight inches high, and the old broken down stubble. Quill reeds (*Phragmites*) on the right.



across the slough and there in the quill-reeds found many Yellow-headed Blackbirds, and to his surprise discovered that the females were also present in full force and busily engaged in building nests. Some two dozen nests were found about a little pond separated a little way from the main slough. They were in all stages of construction, two or three being completed and nearly dry. A suitable territory for making the observations contained in this paper was selected and outlined so that as little confusion as possible would result in keeping tab on the nests. An area of quill-reeds, then almost free from nests, was chosen.

When, therefore, the work began on the afternoon of May 13, marsh vegetation was only just starting and very little new growth had sprung up among the old, dry, last year's reed stalks — only a green shoot here and there. Out in the slough the wild rice had not yet appeared above the surface of the water, the last year's dead stubble alone being visible. The first nests of the Yellow-heads are thus, of necessity, hung among the old reed stalks, only the later ones including new growth, but even in the latter the rigid last year's stems always form the chief support. Throughout Minnesota these quill-reed swamps or 'cane-brakes,' as they are often locally called, form the almost exclusive nesting sites of the Yellow-headed Blackbird. So true is this that the distribution of this bird, in the nesting season, is largely determined by the presence of this plant. In times of high water in May and June the Yellow-heads may be driven to nest elsewhere, selecting then various unusual sites. Under such conditions nests may be found built among bulrushes (*Scirpus*), and occasionally the birds are forced to build in the willows bordering the sloughs, after the manner of the Grackles and Red-wings. It is sometimes stated¹ in accounts of the nesting of this bird that it places its nest among wild rice (*Zizania aquatica*), but this is rendered impossible by the fact that the old rice stalks are weak and fall into the water in the autumn, leaving only a low broken stubble; while the new growth is usually only eight or ten inches high when the nesting season of the Yellow-head is over.² It is true, however, that in rare instances

¹ J. W. Preston, *Oölogist*, Vol. I, July, 1884, p. 36. Bendire, *Life Hist. N. Amer. Birds*, 1895, p. 448 (quoting B. T. Gault).

² Attention was called to this matter and a full explanation given by Ludwig Kumlien of Milton College, Wis., in 'The Osprey,' Vol. I, May, 1897, p. 117.

stray nests are built among the low rice stubble, this bringing the bottom of the nest almost to the water-level, a precarious position, since a very little rise in the water in the slough would submerge such nests.

The first day that the reed-clump selected was examined only three nests were found, one about completed and two just begun. During the next two days — May 14 and 15 — twenty-eight (28) nests were tagged. Nest-building was then at its height and for some days thereafter intense activity was displayed. New nests were started almost daily until the end of May and one as late as June 2. These later nests were probably, as will appear further on, the work of unskillful birds that had failed in their earlier attempts. In all, sixty-two (62) nests, counting unfinished attempts as well as completed nests, were discovered, tagged, and subjected to daily scrutiny in this one clump of reeds. Leaving the recital of the detailed notes made during the thirty-two days to form an addendum to this paper, a general summary of the findings may here be presented as being of chief interest to the general reader. For a clear understanding of how some of the observations were obtained it should be stated that many hours were spent at various times throughout the month in quietly watching, glass in hand, the workings of the colony from a convenient distance.

It was never possible to tell just how many pairs of Yellow-heads composed this colony; but probably thirty pairs is not far from the correct number.

The females did all the work connected with the nest building, the males taking no part whatever.

The females incubated the eggs without any assistance from the males, except that occasionally the males brought food to their sitting mates.

While the nests were being built and the eggs incubated the males remained about the locality part of the time, perching on the reed tops and occasionally showing some interest and concern, especially if a hawk, bittern or other large bird appeared; but they were more often absent roving about the neighboring upland in little parties, foraging for food and amusing themselves. All the birds, females as well as males, seemed to leave the nesting place to feed and could be seen departing or returning in little straggling bands, this being especially noticeable morning and evening.

The males assisted the females to a rather limited extent in feeding the young. Observations in regard to the young were unfortunately rather curtailed in this study for reasons that will appear later. At other times the male bird has occasionally been seen feeding the young both in the nest and after they had left the nest and were perched about among the reed tops. Grasshoppers, various insects and a large black larva of some sort which the birds obtained from among the decayed vegetation in the shallow water along the edges of the slough formed the chief food supply. These larvæ were ugly and formidable objects and were thrust down the throats of the young birds with considerable difficulty. On one occasion a female was seen carrying a large flat object, squirming and curling about her bill, which was evidently a leech.

The nests were placed from two to three feet above the water. The body of the nest was invariably constructed of water soaked dead grass blades picked out of the water of the marsh. This sort of material being soft and pliable was easily woven and wound around the reed stems to the smooth surface of which it closely adhered; and when the structure, which was at first very wet, soggy and dark colored dried in the sun and wind, it contracted and drew the included reed stems nearer together thus forming a compact, firm, and securely attached basket-like nest. The lining consisted of pieces of broad, dry, reed leaves and the rim of the nest was well finished off with the fine branches of the plume-like fruiting tops of the reeds. Occasionally the lining was not placed for a day or two until the nest had dried somewhat, but usually the coarse lining was added, in part at least, to the bottom and around the walls while the body of the nest was still in course of construction and soft and wet. The finishing touches to the nest consisted in adding the fine material about the upper walls and rim which, in the more perfect nests, partially closed and formed a sort of canopy over the entrance. The details in the construction of the nest and the considerable variation in the finish and size of different nests are better shown in the accompanying illustrations than can be presented by written description.

Of the sixty-two nests, twenty-eight were abandoned before completion, being deserted in all stages of construction from the first few strands to almost finished nests. Careful examination

revealed the fact that in almost all, if not all cases, this was due to faulty workmanship or poor judgment in selecting a site. Either the material was not wet enough, making it impossible to handle it satisfactorily and not affording sufficient shrinkage, or it was not well placed, or the reeds forming the support were improperly situated so that as the nest dried it became distorted and unfit for use. In one instance, it was positively determined that the same bird built four imperfect nests before being able to construct one that was habitable. She was closely watched for hours and as she had chosen an open place in the edge of the clump it was easy to observe her movements. After nearly completing one of the faulty nests, this bird seemed suddenly to become aware that it was a failure and in the savage manner in which she tore out the inside and pulled to pieces the rim, displayed a degree of irritability and temper that would have done justice to the average human artisan under similar circumstances. To make matters worse, she began at once the erection of another domicile some fifteen feet away, using the nearly dry material pulled from the despoiled nest. This, of course, she found impossible and although she tried later to carry on the work with wet material this nest, also, was a failure.

A skillful, industrious bird would build one of these large beautifully woven and lined nests, all complete, in from two to four days. Of twenty well built nests, nine were finished in two days, nine in three days and two in four days. It never ceased to be a source of astonishment how these bulky, well made structures could spring up almost over night when it was considered that a single bird had not only to collect but skillfully manipulate all this large mass of material.

Thirty-six of the sixty-two nests begun were completed and received eggs. In only twenty-six of the thirty-six was the whole clutch laid. From one to five days was allowed to elapse after the completion of the nest before egg-laying began. The eggs were invariably deposited one each day. Of the twenty-six completed sets, there were two sets of three each, twenty-two sets of four each, and two sets of five each.¹ In one instance, a Cowbird's egg was

¹ The writer in a large experience has never found a set of six eggs, although this number is sometimes given by authors. No detailed description of the eggs is given here, as that formed no part of the present study.

deposited in a nest in which the Yellow-head had three eggs and the latter laid no more eggs but incubated these four.

All the eggs of a set are colored alike but there is considerable variation in different sets. Occasionally the appearance in a nest of an egg differently marked from those already there, suggested the possibility of a female now and then laying an egg in a neighbor's nest.

In seventeen nests the period of incubation was completed; the eggs in nine nests in which the full complement was laid being destroyed before hatching. In these seventeen nests the period of incubation, inclusive of the day on which the last egg was laid, to the day on which the first egg hatched, was nine days in one instance, ten days in twelve, eleven days in three, and twelve days in one. Thus ten days may be considered the usual period of incubation. The nine day period was in the case of the only set of five eggs that hatched.

In the seventeen nests in which incubation was completed all the eggs hatched on the same day in only three nests; in three nests one egg hatched each day; in two nests two eggs hatched the first day and one egg each day thereafter; in four nests the eggs hatched irregularly during three days; in two nests the four eggs in each hatched during two days; in the set of five eggs one egg hatched each day for three days, the remaining two on the fourth day. In one instance it was two days after the first egg hatched before the second hatched, this in a nest containing three eggs, one of which was infertile. In each of three nests there was one infertile egg. This irregularity in the time of hatching of the eggs is perhaps due to individual variation in the time of beginning incubation, or faithfulness to the duties of incubation on the part of different birds.

A brief résumé of the foregoing exhibits the following facts in regard to the nidification of the Yellow-headed Blackbird:

The nesting period in southern Minnesota is from the middle of May to the latter part of June.

The female builds the nest and incubates the eggs without any assistance from the male.

The male assists in the care of the young, but only to a limited extent.

The body of the nest is constructed of wet material, the drying and contracting of which fixes it securely in position.

Among a number of birds there is a remarkable variation displayed in the nest-building ability, some individuals showing such defective instinct in the selection of nesting sites and such a lack of skill in workmanship that they are almost unable to construct serviceable nests.

The usual full complement of eggs is four, sometimes three or five.

The usual period of incubation is ten days.

The eggs of a set rarely all hatch at the same time, usually a period of two to four days being consumed.

The study of this colony of Yellow-headed Blackbirds met with early interference and later was prematurely terminated by an annoying and unexpected series of events, a brief account of which may be of some interest. Very early in the work it became evident that eggs were disappearing from the nests and between this time and the termination of the inspection June 13 every nest in the colony, except one, was emptied of its contents — eggs and newly hatched young — by some marauder or marauders, the identity of which could not be determined. The one unrifled nest contained, June 13, four nestlings several days old and one infertile egg. Assuming that these were also destroyed, which is almost a certainty, there was not a single young bird reared by this colony of Yellow-heads and all the season's effort went for naught. In all, seventy-seven eggs and fifty-three young birds were taken. Nineteen of the thirty-six nests in which eggs were laid were emptied of their contents before the full quota of eggs had been deposited. Sometimes the eggs and young disappeared one or two at a time, more commonly the nest was completely emptied between one visit and the next. Usually the nests were not soiled or disarranged in any way. In a few instances there were pieces of egg shells clinging to the reeds or lying in the water below the nests, and once or twice blood stains on the inside or rim of the nest. In one nest there remained two tiny feet and some pieces of flesh, and in another nest four feet, showing that in these instances at least the young birds were dismembered and devoured piecemeal. Once the dead body of a nestling that had fallen from the nest and been drowned in the water below, disappeared during the same night that its fellows in the nest above were disposed of.

Watch and examine as closely as we could we were unable to

determine what animal or animals it was that devoured these eggs and birds. Presumably some small carnivorous mammal that mounted the reed stalks from the water below, too nimble footed and light bodied to leave any traces of its presence beyond the despoiling of the contents of the nest. A pair of Least Bitterns established themselves in the midst of the Yellow-head colony, building their nest and laying their eggs, and from the unceasing animosity displayed toward them by the Blackbirds, suspicion fell on these birds. One of them was shot and its stomach examined but it contained no traces of eggs or young birds. The dismemberment of the nestlings would also seem to exonerate the Bitterns for they would certainly have swallowed them whole. The mystery remained unsolved and I leave it for the speculation of those who may be interested. It is but another of those tragedies constantly occurring which seem to show how natural agencies operate to destroy in great numbers birds and other animals, the too great increase of which would seriously disturb the natural balance of things.

*TRANSCRIPT OF NOTES MADE DURING A DETAILED STUDY
OF A BREEDING COLONY OF YELLOW-HEADED BLACK-
BIRDS NEAR MINNEAPOLIS, MINN., IN 1901.*

NEST I. *May 13th.* Completed, including lining; entirely dry. *14th.* Empty; pair keep close by. *15th to 17th inclusive.* Empty. *18th.* One egg. *19th.* Two eggs. *20th.* Three eggs. *21st.* Four eggs. *22nd to 30th inclusive.* Four eggs. *31st.* One young bird and three eggs. *June 1st.* Two young birds and two eggs. *2d.* Three young birds and one egg. *3d.* Four young birds. *4th.* Four young birds, pin-feathers showing plainly on two of them. *5th.* Four young birds. *6th.* Not visited, severe wind-storm. *7th.* Nest blown loose and fallen partly over; one young bird dead in water below nest; other three have pin-feathers one inch long. *8th.* Empty; all three young birds gone, and also the one that was drowned under the nest yesterday.

NEST II. *May 13th.* Just begun; a few strands; no shape or outline. *14th.* Only one or two additional pieces added — these still wet. *15th.* First attempt abandoned and have begun new nest since yesterday eight inches above beginnings of first one. A loosely constructed affair of finer and dryer material than usual; about one-half of walls built; a few broad leaves already in place but nest frail and not at all firmly placed. *16th.* Not visited. *17th.* Much larger and firmer; now a bulky nest; upper two inches and inside just added, very wet; two strips of broad dry lining

in place. 18th. Empty; a little wet material still being added to rim in places; fine lining being put in. Female makes great ado, much worried and utters rolling, squeaking and croaking notes. 19th. Empty. 20th. One egg. 21st. Two eggs. 22d. Three eggs. 23d. Four eggs, one much lighter than others. 24th to June 3d inclusive. Four eggs. June 4th. Three young birds and one egg. 5th. Four young birds. 6th. Not visited. 7th and 8th. Four young birds. 9th. Empty; nest pulled somewhat loose from fastenings.

NEST III. May 13th. Female working on nest. 14th. Walls incomplete; nearly dry; shallow and appears abandoned; no fresh material. 15th and 17th. Same condition. 18th. One or two damp strands lying on nest but no repairs. 19th to 21st. Abandoned and in ruin.

NEST IV. May 14th. Nearly ready for lining; still building upper part of walls; upper one-third wet; a few large flat pieces of reed leaves forming bottom inside as though for foundation of lining. 15th. About same in morning; at 6 P. M. a few wet strips added to rim on west side, woven around stems and hanging down into nest almost to bottom. 16th. Not visited. 17th. Appears deserted. 18th. Abandoned and going to ruin. 21st. Same.

NEST V. May 14th. Ready for lining, a little of which has been placed; wet nearly throughout, but this nest is among thickly standing reeds so that it is protected from sun and wind and would not dry as rapidly as more exposed nests. 15th. Completely lined, fine reed-tops around upper edge; nest still damp and soggy but lining dry. 16th. Not visited. 17th. Empty; dry and firm. 18th. Empty; in good condition; female close by with bit of reed in bill. 19th. One egg; fine lining at rim has been added since yesterday. 20th. Two eggs. 21st. Three eggs. 22d. Four eggs. 23d to 31st inclusive. Four eggs. June 1st. One young bird, three eggs. 2d. Three young birds, one egg. 3d. Three young birds, one egg. 4th. Three young birds, one egg; pin-feathers starting on one bird. 5th. Three young birds, one egg. 6th. Not visited. 7th. Empty; no soiling or disarrangement of nest.

NEST VI. May 14th. Still in early stage of construction, little more than framework; wall open to bottom on two sides, built up about three-fourths way around. 15th. Wall completed and first coarse bottom-lining and one or two strands of fine lining placed; female in nest when approached. 16th. Not visited. 17th. Completed and quite dry around top; body still damp and soft. A nicely lined nest, the edge thick and well built of reed-plumes. 18th. One egg. 19th. Two eggs. 20th. Three eggs. 21st. Four eggs, female on nest. 22d to 30th inclusive. Four eggs; female found on nest 27th and 30th. 31st. Two young birds and two eggs; female on nest. June 1st. Three young birds and one egg. 2d. Four young birds; female on nest; she made a great hue and cry and called the neighbors around till the reeds were full of them — mostly females. 3d. Four young birds. 4th. Empty; inside of nest spotted with blood.

NEST VII. *May 14th.* Nearly ready for lining, a little coarse material already placed. *15th.* Coarse lining all in, no fine top-lining. *16th.* Not visited. *17th.* Empty, in good condition. *18th.* One egg. *19th.* Two eggs. *20th.* Three eggs; coarse lining much disarranged and partly covering eggs. *21st.* Four eggs. *22d.* Four eggs. *23d.* Five eggs. *24th.* Four eggs; nest loosened from its hold on reeds and has slipped down about two feet, now within one foot of water, which is six inches deep; scattered strands left hanging all up and down reeds where nest had slipped. *25th.* Four eggs; nest torn and frayed out on one side. *26th.* Four eggs, warm. *27th to 31st inclusive.* Four eggs. *June 1st.* Two young birds, two eggs. *2d.* Three young birds, one egg. *3d.* Empty; nest clean.

NEST VIII. *May 14th.* Completed; still wet at top in places, protected from sun and wind by thick reeds. *15th.* Empty. *16th.* Not visited. *17th.* Empty, bottom lining a little disarranged. *18th.* Empty, more disarranged. *19th to 21st.* Abandoned.

NEST IX. *May 14th.* Completed and entirely dry, exposed to sun and air. *15th.* Empty; adding fine lining around rim. *16th.* Not visited. *17th.* Empty. *18th to 21st.* Abandoned.

NEST X. *May 14th.* Body finished but still wet nearly throughout owing to protection from sun and wind; large pieces of reed leaves forming bottom of lining already in; first strands of fine lining just placed. *15th.* About complete, still damp and soft. *16th.* Not visited. *17th.* One egg; nest dry and firm. *18th.* One egg. *19th.* Two eggs. *20th.* Three eggs. *21st.* Four eggs. *22d.* Five eggs. *23d to 30th inclusive.* Five eggs. *31st.* One egg hatched. *June 1st.* Two eggs hatched. *2d.* Three eggs hatched. *3d.* Five eggs hatched. *4th.* Empty, except two feet of young birds and several small pieces of flesh left in nest.

NEST XI. *May 14th.* Ready for lining; one wide dry leaf in place; upper part of sides and interior of nest still wet. *15th.* Coarse lining nearly complete, no fine lining; a very large and deep nest. *16th.* Not visited. *17th.* Same as on 15th.; no fine lining. *18th.* Empty, no fine lining at rim. *19th.* One egg. *20th.* Two eggs. *21st.* Three eggs. *22d.* Four eggs. *23d to 31st inclusive.* Four eggs. *June 1st.* One young bird, three eggs. *2d.* Three young birds, one egg. *3d.* Four young birds. *4th.* Four young birds; pin-feathers just starting on two of them. *5th.* Four young birds; pin-feathers on two about one-half inch long. *6th.* Not visited. *7th.* Four young birds; pin-feathers one inch long on three and one-half inch long on the fourth. *8th.* Four young birds; tips of brown feathers beginning to show, giving a general brownish hue to the nestlings. *9th.* Empty; blood on inside of nest.

NEST XII. *May 14th.* A completed and entirely dry nest; bottom lining of large pieces of reed-leaves three-fourths inch wide. *15th.* Lining torn out and disarranged; some of the fine reed-tops and broad bottom lining lying across top of nest. *17th.* Badly disarranged and plainly deserted.

NEST XIII. *May 14th.* Upper sides being built, nest wet and soggy throughout; sides incomplete and with holes; a few pieces of wide reed-leaves (dry) already in bottom. *15th.* Coarse lining complete, very little fine lining; nest at this stage not contracted at rim. *16th.* Not visited. *17th.* Empty; in good condition. *18th.* Missed. *19th.* Two eggs. *20th.* Three eggs. *21st.* Four eggs. *22d to 30th inclusive.* Four eggs. *31st.* One young bird, three eggs. *June 1st.* Three young birds, one egg. *2d.* Four young birds. *3d.* Four young birds. *4th.* Four young birds; one downy, one with pin-feathers just starting, one with pin-feathers about one-fourth inch long and the other with pin-feathers about one-half inch long. *5th.* Four young birds. *6th.* Not visited, severe storm. *7th.* Nest evidently blown loose in high wind yesterday; it slipped down about six inches and turned over so that all four young birds fell out; they were all in the water under the nest, dead, evidently drowned; not killed by any animal; later they disappeared.

NEST XIV. *May 14th.* Framework nearly complete, wet throughout; no dry leaves inside; upper edge of walls incomplete. *15th.* Walls complete and part of coarse lining placed; two pieces of latter lying across top of nest ready to be placed in position. *16th.* Not visited. *17th.* Complete and dry; a pretty nest. *18th.* Same. *19th.* One egg. *20th.* Two eggs. *21st.* Three eggs. *22d.* Four eggs. *23d to 31st inclusive.* Four eggs. *June 1st.* One young bird, three eggs. *2d.* Three young birds, one egg. *3d, 4th and 5th.* Four young birds. *6th.* Not visited. *7th.* Empty; four feet of young birds left in nest.

NEST XV. *May 14th.* Ready for lining; black, wet and soggy throughout. *15th.* Part of coarse, and few strands of fine, lining placed; drying out and much lighter colored; this nest was built of very wet and black material so that it was at first very conspicuous. *16th.* Not visited. *17th.* Dry and light colored. *18th.* Empty; two snails in bottom of nest. *19th.* One egg. *20th.* Two eggs. *21st.* Three eggs. *22d to 31st inclusive.* Three eggs. *June 1st.* One young bird, two eggs. *2d.* Three young birds. *3d.* Three young birds. *4th.* Empty; blood spots on inside of nest.

NEST XVI. *May 14th.* Finished; well lined; still wet in walls and bottom and soft on pressure. *15th.* Empty; becoming dry; no coarse broad reed leaves in bottom lining as usual, strips of fine grass instead. *16th.* Not visited. *17th.* Same as on 15th. *18th.* One egg. *19th.* Two eggs. Several large pieces of reed-tops form a fringe three inches high on one side of the nest due to their being loosely woven in the rim, the fine plumes waving in the breeze and forming a sort of one-sided bower; the fine lining otherwise closely placed as usual. *20th.* Three eggs. *21st.* Four eggs. *22d.* Five eggs. *23d.* Five eggs. *24th.* Empty, no sign of eggs; nest is one and one-half feet above water.

NEST XVII. *May 14th.* A large nest; bottom lining in; hole in one side; dry inside and below, still wet throughout walls; no fine lining. *15th.* Apparently entirely completed. *16th.* Not visited. *17th.*

Empty; dry; very little coarse lining, fine lining throughout bottom as well as sides and rim. 18th. Empty; good condition. 19th. One egg. 20th. Two eggs. 21st. Three eggs. 22d. Three eggs. 23d. Three eggs. 24th. Empty, no sign of eggs; nest about two feet above water, latter only few inches deep.

NEST XVIII. *May 14th.* Completed, ready for fine lining; coarse lining mostly in; soft and soggy on pressure. 15th. Fine lining about complete; dryer and fairly firm. 18th. One egg. 19th. Two eggs. 20th. Three eggs. 21st. Four eggs. 22d. Four eggs. 23d. Four eggs. 24th. Empty; no sign of eggs; nest about two feet above water, latter about one and one-half feet deep.

NEST XIX. *May 14th.* Only first strands laid. 15th. Foundation and one and one-half inches of walls built, forming a broad shallow cup. 17th. Completed and all of broad lining in place, extending to rim; no fine lining; still a little damp and soft. 18th. Empty; dry; a very little fine lining. 19th. Empty. 20th. One egg. 21st. Two eggs; these eggs are very unlike in appearance, representing extremes; one has a dirty white ground color with lilac and umber spots, the other pale green ground with less numerous spots giving it a general greenish tone. 22d to 24th inclusive. Two eggs. 25th. One egg, no sign of other. 26th. One egg. 27th. One egg; cold.

NEST XX. *May 14th.* Walls nearly finished but still full of holes; no coarse lining yet; rim of nest unformed; wet. 15th. Complete except finer lining; fairly dry but still little soft. 17th. Complete and dry except lacks usual fine lining at rim, strips of reed-leaves taking its place. 18th. Empty. 19th. One egg. 20th. Two eggs. 21st. Three eggs. 22d. Four eggs. 23d to 29th inclusive. Four eggs. 30th. Three eggs, no sign of fourth. 31st. Three eggs, warm. *June 1st.* Three eggs, warm. 2d. One young bird, two eggs. 3d. One young bird, two eggs. 4th. Two young birds, one egg; no pin-feathers showing on young birds. 5th. Two young birds, one egg; pin-feathers just starting on one young bird. 6th. Not visited. 7th. Two young birds, one egg; pin-feathers on one nestling about one half inch long, other still downy. 8th. Two young birds, one egg. 9th. Empty.

NEST XXI. *May 15th.* Ragged first part of framework; has been built since yesterday as it is near marked nest and was not then seen; all material very wet and apparently just placed. 16th. Not visited. 17th to 21st. No further work; evidently abandoned.

NEST XXII. *May 15th.* Completed and dry nest; evidently missed on 14th; perhaps lining not quite finished, very little fine top material On returning two hours later the lining in nest had been much torn up and disarranged, the broad bottom strips lying across entrance to nest. Two hours later lining only little disarranged. 16th. Not visited. 17th. Completed and in good condition; dry and firm. 18th. Empty. 19th. One egg. 20th. Missed. 21st. Three eggs. 22d. Four eggs. 23d to 31st inclusive. Four eggs. *June 1st.* One young bird, three eggs.

2d. Two young birds, two eggs. 3d. Empty; both young birds and both unhatched eggs gone, no trace of either.

NEST XXIII. *May 15th.* Completed and dry nest; an abandoned attempt at a nest, consisting only of foundation, eight inches below bottom of this nest. 16th. Not visited. 17th. Empty; appears abandoned. 18th. Empty; lining all pulled out. 19th to 21st. Empty; evidently abandoned.

NEST XXIV. *May 15th.* Beginnings of a nest; damp but appears deserted. 16th. Not visited. 17th. Not much further work, only one damp strand apparently recently placed. 18th. Missed. 19th. Walls as to height about completed but full of holes, two of the latter are large open spaces; top and all of inside freshly laid and wet; a ragged, crude nest. 20th. Still adding new material to walls, wet and dark colored; dry nearly to rim outside; a few pieces of broad lining. 21st. Broad lining complete; no fine rim lining; quite dry. 22d. Same. 23d. One egg. 24th. Two eggs. 25th. Two eggs. 26th. Three eggs. 27th. Three eggs. 28th. Not visited. 29th. Empty, no sign of eggs; nest not soiled nor torn; two and one-half feet above water which is very shallow. 30th to June 3d. Empty.

NEST XXV. *May 15th.* Nearly completed framework but still full of holes and upper edge still ragged and unfinished; wet. This nest is in an open place and could not have been overlooked yesterday; apparently it has been built thus far in last twenty-four hours. Female after working all day, began about 5.15 p. m. to pull nest to pieces and begin a new nest about fifteen feet away, using at first the old material. 16th. Not visited. 17th to 21st. Abandoned; very little material removed.

NEST XXVI. *May 15th.* 6 p. m. First few strands of a new nest, not more than six or eight pieces; nearly dry, just removed from nest No. XXV which the female is pulling to pieces and removing to this place fifteen feet away. 16th. Not visited. 17th. A large bulky deep body, walls full height but still full of holes; wet except the strands at bottom. 18th. Abandoned after being almost ready for lining. 19th. Same; no further work; a loose poor structure. Nests III, XXV, XXVI and XLIV were built by the same bird and abandoned at various stages; all badly and loosely constructed; all near together. (See nest XLIII which was her finished product).

NEST XXVII. *May 15th.* First strands of nest; dry and perhaps abandoned. 17th. No further work; abandoned.

NEST XXVIII. *May 15th.* First dozen strands of a nest; dry material; tying crossing reeds together; probably abandoned attempt. 16th. Not visited. 17th. The above attempt was abandoned and to-day there is a bulky well built nest directly over it at a distance of twelve inches; walls complete and first strands of broad and fine lining being placed at same time; walls very wet and soggy and dark colored. These birds, both male and female, show much more concern than usual, both flying and perching about and croaking in a worried manner. 18th. Completed



YELLOW-HEADED BLACKBIRD STUDIES.

Upper figure, a nest in course of construction, still wet and soggy, and exhibiting unskilled workmanship.

Lower figure, nest VII; loosened from its hold on the reeds and slipped down two feet, leaving scattered strands hanging in its descent; not abandoned.

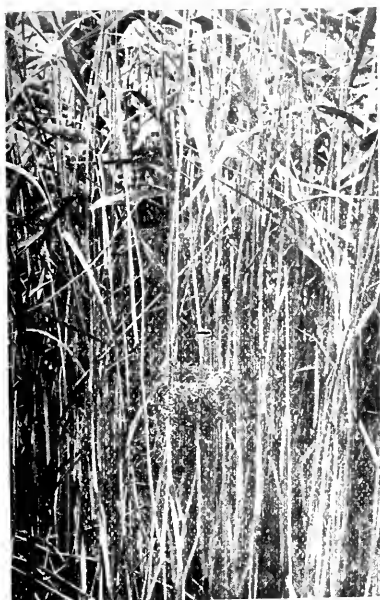




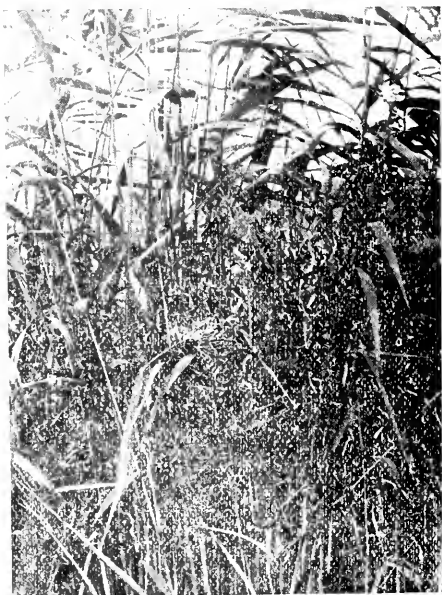
YELLOW-HEADED BLACKBIRD STUDIES.

Four stages in the construction of the nest.





1.



3.



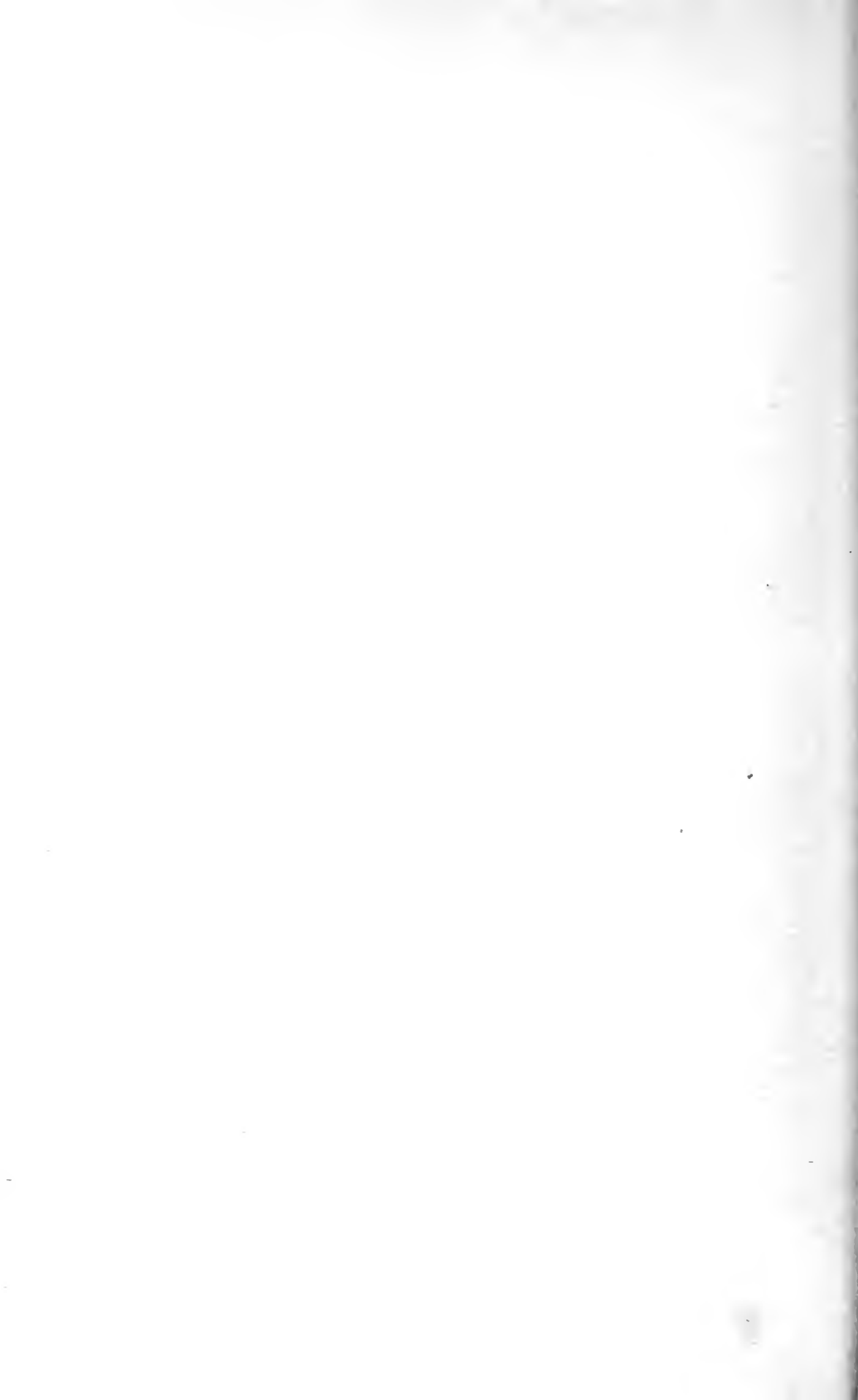
2.



4.

YELLOW-HEADED BLACKBIRD STUDIES.

1. An unusually small, shallow nest; outside depth 4 inches. 2. An unusually large, deep nest. 3 and 4. Two nests showing abandoned beginnings below completed nests. 1, 2, and 3 taken with the same lens at the same measured distance.





YELLOW-HEADED BLACKBIRD STUDIES.

Upper figure, nest built in unusual and unsafe position near top of reeds.

Lower figure, nest among bulrushes in upland slough, when high water in the bottom-lands had driven the birds from their usual quill-reed haunts.

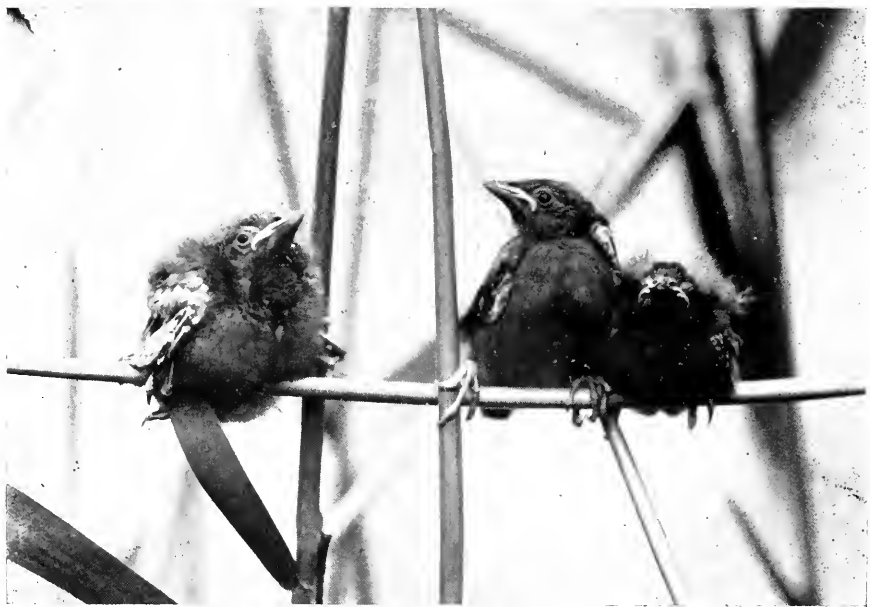




YELLOW-HEADED BLACKBIRD STUDIES.

A studio-photograph of an unusually well-built and partially canopied nest; height, 11 inches.





YELLOW-HEADED BLACKBIRD STUDIES.

Upper figure, three fledglings about ready to leave the nest for life among the reed-tops where they are almost as agile as squirrels.

Lower figure, the same three fledglings, twenty-four hours later, showing their rapid development.





1.



2.



3.

YELLOW-HEADED BLACKBIRD STUDIES.

1. Female feeding young by regurgitation.
2. Male hastily feeding young, after showing much timidity in approaching nest.
3. Interior of nest showing coarse bottom lining and fine rim lining.





1



2



3

YELLOW-HEADED BLACKBIRD STUDIES.

Song attitudes of the male Yellow-head. 1. The quiet, not unmusical first notes. 2. The more vigorous middle notes, showing the swelling throat and spreading tail, leading up to the violent contortions shown in 3, during which is emitted the final raucous scream. The entire song may be recalled by the syllables *pop', go-o-es, th' we-e-e-zel'*, the last syllables long drawn out, with an upward trend at the finish.



nest, except no fine lining but coarse lining extends to top; appears like completed nest. 19th. Empty; a little fine lining at rim; nest not much contracted at rim. 20th and 21st. Empty. 22d. One egg. 23d. Two eggs. 24th. Three eggs. 25th. Four eggs. 26th to June 3d inclusive. Four eggs. 4th. Empty; no sign of eggs or soiling of nest.

NEST XXIX. May 15th. Bulky and loose foundation; dry, appears abandoned. 16th to 20th. Abandoned.

NEST XXX. May 15th. Completed nest; lining all in; almost entirely dry and firm; nest somewhat tipped. 16th. Not visited. 17th. Empty; nest near edge of reed-clump where water at present is only three or four inches deep. 18th. Empty. 19th. One egg, 20th. Two eggs. 21st. Only one egg remaining; the other cannot be found; nearly all the fine rim lining and most of the coarse bottom lining has been torn out and lies on water and among reeds; rim of nest on one side torn and ragged; the walls reduced to thin shell full of holes. 22d. Two eggs. 23d. Two eggs; twelve snails in nest; apparently abandoned. 24th to 26th. Abandoned.

NEST XXXI. May 15th. Beginnings of a nest, first shapeless lashings of reed-stems together. 16th to 20th. Abandoned without further work.

NEST XXXII. May 15th. First dozen strands of nest, upper one wet, so just placed. 17th. Abandoned after very little further work.

NEST XXXIII. May 17th. Shallow basket-like structure, first wet beginnings of a nest. 18th. Walls about completed, but still loose and with crevices; very wet and dark; a few broad pieces of dry reed-leaves in place. 19th. Complete except last strands of fine lining; a well built, pretty nest, neatly lined. 20th. Empty; one piece of broad lining lying loose in nest. 21st. Empty; in good condition. 22d. One egg. 23d. Two eggs. 24th. Two eggs. 25th. Three eggs. 26th. Two eggs; neither inside of nest nor remaining eggs soiled. 27th to June 3d inclusive. Two eggs, warm when visited on 31st. 4th. Empty; shell of one egg lodged on reeds under nest.

NEST XXXIV. May 17th. Built since 5 P. M. May 15th, three feet from nest XXI and probably by the bird that abandoned that attempt; framework half completed, walls thin and full of holes, rim not yet reached; wet throughout. 18th. Completed and well lined, both coarse and fine lining; a well built, compact, bulky and pretty nest. 19th to 21st inclusive. Empty but in good condition. 22d. One egg. 23d. Two eggs. 24th. Three eggs. 25th. Four eggs; whole set marked with light reddish brown giving an unusual reddish-brown cast to the eggs, all with conspicuous hair-line scrawl-markings at larger ends. 26th to June 3d inclusive. Four eggs. June 4th. One young bird, three eggs. 5th. Two young birds, two eggs. 6th. Not visited. 7th. Empty; no sign of birds or eggs.

NEST XXXV. May 17th. A new nest since 6 P. M. May 15th; completed except fine lining a little of which is in place. 18th. Same; no fine lining of any account; appears finished. 19th. Lining and rim disarranged; seems abandoned. 20th and 21st. Abandoned.

NEST XXXVI. *May 17th.* Built since noon May 15th; bulky lower two-thirds of nest, walls very incomplete; all wet except bottom strands. *18th.* Have added one inch to walls; wet at rim and inside; the new material placed around rim and throughout interior thus keeping inside of nest wet until ready for lining. *19th.* Body complete and little of coarse lining in place; a loose nest, can see through chinks here and there; incomplete rim; among small reeds growing in water only three or four inches deep. *20th to 27th.* Empty; abandoned.

NEST XXXVII. *May 17th, 7 A. M.* First few strands of a new nest; material wet and just placed near nest XXIII (abandoned). *18th.* A little additional work; wet. *19th to 22d.* Abandoned without further work; a thin shallow basket.

NEST XXXVIII. *May 17th.* Built since 6 P. M. May 15th, close by nest IV which appears abandoned; a large nest nearly ready for lining; a few pieces of broad bottom lining in place; very wet and walls still full of holes and crevices. *18th.* Walls just completed, upper inch wet and dark, just placed; coarse lining loosely laid and some of upper fine lining well in place. *19th.* One egg; a handsome nest, well lined and with much fine rim lining; dry throughout. *20th.* Two eggs. *21st.* Three eggs. *22d.* One egg, no sign of other two. *23d.* One egg; snail in nest. *24th.* One egg. *25th.* One egg. *26th.* One egg, cold. *27th.* Same egg and one Cowbird's egg deposited since yesterday!

NEST XXXIX. *May 17th.* A new nest since evening of May 15th, near nest XXI (an abandoned beginning); ragged outline of whole nest but walls merely run up with coarse material, full of holes and openings and entirely lacking on northeast side; very wet. *18th to 21st.* Abandoned with no further work.

NEST XL. *May 17th.* First few wet strands just placed. *18th and 19th.* No further work. *20th.* A little wet material added this morning. *21st.* Abandoned.

NEST XLI. *May 17th.* New structure since 5 P. M. May 15th; bulky framework two-thirds complete; very wet. *18th.* A little material added to walls which are filled in and without holes but decidedly lower than usual; a shallow and imperfect affair. *19th.* Appears abandoned. *20th.* Two or three wet strands added this morning. *21st.* Good condition but no fine lining. *22d.* Same. *23d.* One egg. *24th.* Two eggs. *25th.* Three eggs. *26th.* Four eggs. *27th to June 4th inclusive.* Four eggs. *5th.* Empty; no sign of eggs.

NEST XLII. *May 17th.* Foundation of nest, mostly wet. *18th.* Body well built; rim still incomplete and ragged; one or two broad dry strips of reed-leaves in bottom. *19th.* Considerable broad lining, some loose and not placed. *20th and 21st.* Completed; empty. *22d.* One egg. *23d.* Two eggs. *24th.* Three eggs. *25th.* Three eggs. *26th.* Three eggs of owner and one Cowbird's egg. *27th to June 2d inclusive.* Same. *3d.* Empty; no sign of eggs.

NEST XLIII. *May 18th.* In small bunch of reeds in open place;

begun since yesterday; first shallow cup, bottom and one inch of sides, wet; two or three dry leaf blades already carelessly placed as part of bottom lining. 19th. Complete except lining and finishing rim. 20th. Coarse lining in place; a few strands about rim. 21st. Finished nest in good condition. This nest is the first finished, successful effort of the bird that constructed nests III, XXV, XXVI and XLIV which were failures. 22d. Empty. 23d. One egg. 24th. Two eggs. 25th. Three eggs. 26th. Two eggs, no sign of the other. 27th to June 2d inclusive. Two eggs, bird incubating. 3d. Empty; no sign of eggs.

NEST XLIV. May 18th. First outline of bottom cup, open lacework 19th to 22d. No further work, abandoned.

NEST XLV. May 18th. A large bulky nest built since yesterday; coarse lining all in. In conspicuous place and could not have been missed. 19th. Not visited. 20th. Completed and empty. 21st. Not visited. 22d. Two eggs. 23d. Three eggs. 24th. Four eggs. 25th to June 2d inclusive. Four eggs. 3d. One young bird, three eggs. 4th. Empty; blood spots on inside of nest.

NEST XLVI. May 18th. First few strands of a nest, just placed. 19th. Loose bowl or cup-shaped bottom, ragged and imperfect; wet. 20th. Walls completed and lining begun. 21st. One egg; nest nearly dry and firm. 22d. Empty, except two snails in nest; one piece of coarse bottom lining lying loosely across inside of nest. 23d to 27th. Abandoned.

NEST XLVII. May 19th. First framework of nest, built since yesterday close by nest XXII; walls simply lacework on stems. 20th. Not visited. 21st. Still working; upper parts of walls unfinished, wet and black material; some coarse bottom lining being placed. 22d. A few strands of fine lining. 23d. Nothing more done. 24th. One egg. 25th. Two eggs. 26th. Three eggs. 27th. Four eggs. 28th. Not visited. 29th to June 5th inclusive. Four eggs. 6th. Not visited. 7th. Empty; no sign of eggs.

NEST XLVIII. May 19th. First beginnings of a nest since yesterday; only one or two wet strands; four inches below these are other strands previously securely wound around the reed-stems. 20th. Bottom and walls partly constructed; wet. 21st to 26th. No further work; abandoned.

NEST XLIX. May 19th. Seen first to-day; may have been overlooked yesterday; a large bulky nest situated low down among small reeds where water is only three or four inches deep; coarse lining about all in and a little fine lining; one of the largest nests seen. 20th and 21st. Empty. 22d. One egg. 23d. Two eggs. 24th. Three eggs. 25th. Four eggs. 26th to June 3d inclusive. Four eggs. 4th. One young bird, three eggs. 5th. Empty; no sign of nestling or eggs.

NEST L. May 19th. Beginnings of nest since yesterday, first loose strands; dry; near nest XLI. 20th and 21st. Abandoned without additional work. (Apparently the bird that temporarily abandoned nest XLI began this nest and then went back and completed her first effort.)

NEST LI. *May 19th.* Basket-like bottom of fine dry material placed since yesterday. *20th and 21st.* Abandoned without further work.

NEST LII. *May 20th.* A new nest partly built of finer and dryer material than usual. *21st.* Well built; still adding some fine wet material around rim; coarse lining in; rim not yet completed. *22d, 23d and 24th.* Same. *25th.* One egg. *26th.* Two eggs. *27th.* Three eggs. *28th.* Not visited. *29th.* Four eggs, one much lighter colored than others. *20th to June 5th inclusive.* Four eggs. *6th.* Not visited. *7th.* Two young birds, two eggs; female on nest. *8th.* Three young birds, one egg. *9th to 13th inclusive.* Same. (Examination of colony discontinued on 13th.)

NEST LIII. *May 20th.* A completed nest, well lined; low down in reeds where water is shallow; must have been overlooked heretofore; empty. *21st and 22d.* Empty. *23d.* Not visited. *24th.* Two eggs. *25th.* Three eggs. *26th.* Four eggs. *27th to June 5th inclusive.* Four eggs. *6th.* Not visited. *7th.* Empty; no sign of eggs.

NEST LIV. *May 21st.* A few strands of new nest. *22d to 27th.* No further work; abandoned.

NEST LV. *May 21st.* New beginning since yesterday; a shallow unshaped bottom; *22d.* Walls entirely completed; few strands of coarse lining in place. *23d to 24th.* Same; empty. *25th.* Fine lining at rim completed; empty. *26th.* One egg. *27th.* Two eggs. *28th.* Not visited. *29th.* Two eggs. *30th.* Two eggs; included reeds on one side seem to be pulling away from nest. *31st to June 5th inclusive.* Two eggs. *6th.* Not visited. *7th.* Nest all torn to pieces and fallen down, possibly due to high wind yesterday; egg shells scattered under nest.

NEST LVI. *May 21st.* Two or three coarse wet strands just placed. *22d to 26th.* Abandoned.

NEST LVII. *May 21st.* Large new beginning since yesterday; walls well up but full of holes; wet and dark throughout. *22d.* Coarse lining and a few strands of fine lining in. *23d.* Nothing more done; empty. *24th.* One egg. *25th.* Two eggs. *26th.* Three eggs. *27th.* Four eggs. *28th.* Not visited. *29th to June 5th inclusive.* Four eggs. *6th.* Not visited. *7th.* Three young birds, one egg. *8th.* Four young birds. *9th.* Two young birds. *10th.* Two young birds. *11th.* Empty; no sign of nestlings.

NEST LVIII. *May 23d.* Cup-shaped bottom not seen yesterday. *24th.* Same. *25th.* Walls well up; few strands of coarse lining in place; wet and soggy. *26th.* Coarse, and little of fine lining in place. *27th.* Same. *28th.* Not visited. *29th.* Two eggs. *30th.* Three eggs. *31st.* Four eggs. *June 1st to 4th inclusive.* Four eggs. *5th.* Three eggs, no sign of fourth. *6th.* Not visited. *7th.* Empty; no sign of eggs.

NEST LIX. *May 27th.* A few strands of dry material have hung here for a week past but since yesterday a new nest has been started a few inches from these and the walls are about one-half completed; wet and soggy. *28th.* Not visited. *29th.* Walls completed, almost dry; coarse

lining in, apparently it was put in dry for it is perfectly so to-day, consists of bright yellow dry strips of old reed-leaves and they stand up loosely from the bottom of the nest at present. 30th. Coarse lining arranged in place since yesterday; some fine lining in; contracted little, if any, at rim; entirely dry. 31st. One egg. June 1st. Two eggs. 2d. Three eggs; female on nest, she called all her neighbors. 3d. Four eggs. 4th and 5th. Four eggs. 6th. Not visited. 7th. Empty; no sign of eggs.

NEST LX. May 29th. Beginning of nest since morning of 27th; shallow bottom, walls hardly started; material wet and dark. 30th. Walls about one-half done, lower part dry; one strip of broad reed leaf in bottom. 31st. Nothing new seems to have been added; dry outside; still damp inside; loosely constructed. June 1st. Few strands added; entire nest almost dry; appears abandoned; one side of nest higher than other. 2d and 3d. No new work. 4th. Bottom lining pulled up loosely; abandoned.

NEST LXI. May 30th. Begun since yesterday; shallow cup, very loosely built, full of holes; wet and soggy. 31st. About one inch more built on walls; one or two pieces of coarse split reed stalks in bottom of nest. June 1st. About three-fourths inch more added to walls; wet. 2d. Coarse lining in and some of fine lining. 3d. Same. 4th and 5th. Empty. 6th. Not visited. 7th. Two eggs. 8th. Three eggs. 9th. Three eggs. 10th. Empty; no sign of eggs.

NEST LXII. June 2d. A bunch of wet material tied around three reeds; just above abandoned beginning of nest III. 3d. Two more bunches of wet material around reeds; no form as yet. 4th to 8th. Nothing further; abandoned.

BIRDS OF CENTRAL ALBERTA.

BY SIDNEY S. S. STANSELL.

I AM located thirty miles northwest of the city of Edmonton, the capitol of Alberta, which is situated in about 114° west longitude and $53\frac{1}{2}^{\circ}$ north latitude. It is in the center of a rich farming district where all kinds of small grains and small fruits are raised in abundance.

The country is peculiar in having large and small 'pot holes,' large and small lakes, large and small spruce and tamarack swamps. Portions are very heavily wooded, mostly with birch, black and white poplars, and with an almost impenetratable deciduous undergrowth. The larger trees afford a splendid nesting site for the arboreal hawks and owls; the birches are the delight of the vireos and grosbeaks, for never was there a more magnificent home for them. The thick deciduous undergrowth forms an ideal retreat for some of the warblers and ground nesting birds. Lakes of all sizes, from a quarter of an acre up to several thousand acres in extent, are found in large numbers; small sloughs and marshy hay meadows are everywhere in evidence, furnishing admirable places for ducks, snipe, etc.

My list of birds was begun in the summer of 1906, and although I was not able to do much that year, during the summer of 1907-08 and 1909 I kept a careful list, noting the date of first arrival, when the species became common, and when it passed on further north, in case it did not breed here.

This is a most interesting locality for one who has time for field work. I have been greatly surprised on several occasions by seeing birds that I did not think were here, nor did any of my ornithological books give them as residents here, nor even as accidental visitants. Of all my surprises the two greatest were when I saw the Mourning Dove and the American Woodcock—two species which breed here, but how abundantly I cannot at present venture to say.

My list would have been a great deal larger if I had been able to visit the districts lying to the west and south, but as time would not

permit me to do this I will have to be content with the list here given and trust that new species may be added each year until the list is complete.

LIST OF SPECIES.

1. *Æchmophorus occidentalis*. WESTERN GREBE.—These birds are somewhat rare in this immediate locality but are quite common and nest in very large colonies some sixty miles to the southeast.

2. *Colymbus holboëlli*. HOLBØELL'S GREBE.—Our most common form of the grebe family, found in nearly every pond and small lake of an acre or more in extent.

3. *Colymbus auritus*. HORNED GREBE.—Seen on several occasions and found nesting, but not common.

4. *Colymbus nigricollis californicus*. EARED GREBE.—Fairly common but not so numerous as Holboëll's Grebe.

5. *Podilymbus podiceps*. PIED-BILLED GREBE.—This is the rarest of the grebes in this locality.

6. *Gavia immer*. LOON.—Very numerous. A pair is usually found on every lake of more than an acre in extent and the larger lakes of from five to twenty-five acres have two or more pairs nesting on them.

7. *Larus argentatus*. HERRING GULL.—A great many are seen during spring and fall, and at times through the summer, but I have not found them nesting.

8. *Larus philadelphia*. BONAPARTE'S GULL.—Very rare; seen but twice in four years.

9. *Sterna forsteri*. FORSTER'S TERN.—I have seen but one pair in this locality but I have authentic report of large colonies some sixty miles to the southeast of here.

10. *Sterna hirundo*. COMMON TERN.—Not very common in this vicinity but quite numerous on some of the larger lakes.

11. *Sterna paradisæa*. ARCTIC TERN.—I have seen but one pair in this locality, in 1907.

12. *Hydrochelidon nigra surinamensis*. BLACK TERN. Very abundant, nesting in nearly every accessible pond or lake, laying their three eggs on a pile of decayed vegetation or on top of a deserted grebe's nest.

13. *Mergus americanus*. MERGANSER.—Seen but once, on the Saskatchewan River near Edmonton.

14. *Mergus serrator*. RED-BREASTED MERGANSER.—Very common in the spring and fall but has not been found breeding.

15. *Anas platyrhynchos*. MALLARD.—Our most abundant duck, nesting either in the sloughs or several hundred yards from the water on the uplands usually covered with deciduous undergrowth.

16. *Nettion carolinensis*. GREEN-WINGED TEAL.—Very common along the smaller and shallower ponds and lakes where it places its nest in the shelter of a bush or under the edge of a pile of brush.

17. *Querquedula discors*. BLUE-WINGED TEAL.—Not so common as *N. carolinensis*, but seen quite often.
18. *Spatula clypeata*. SHOVELLER.—More common in spring and fall than in summer. Usually found in company with the Mallard.
19. *Dafila acuta*. PINTAIL.—Not nearly as numerous as the Mallard, but quite often found nesting.
20. *Marila americana*. REDHEAD.—Very rare; seen only during spring and fall.
21. *Marila vallisneria*. CANVAS-BACK.—Very rare; about as common as *M. americana*.
22. *Marila affinis*. LESSER SCAUP DUCK.—Fairly common in spring and fall, but not met with during the summer.
23. *Marila collaris*. RING-NECKED DUCK.—Very rare; seen but once, during the spring of 1907.
24. *Clangula clangula americana*. GOLDEN-EYE.—Quite common during the spring and fall and met with occasionally in summer. A nest found near here with ten eggs.
25. *Charitonetta albeola*. BUFFLE-HEAD.—Almost as common as the Mallard; nearly every small pond has its pair, and some of them two pairs, of this beautiful little duck. When two or more pairs occupy a single pond, the males are usually very pugnacious, often quarreling and trying to drive each other off the pond for hours at a time.
26. *Harelda hyemalis*. OLD-SQUAW.—Only one specimen seen, which was brought in by a taxidermist.
27. *Oidemia americana*. SCOTER.—Several of these birds were seen flying over Little Devils Lake, July 7, 1909,—the only ones I have seen.
28. *Oidemia deglandi*. WHITE-WINGED SCOTER.—Seen but twice, once in May and once in July.
29. *Oidemia perspicillata*. SURF SCOTER.—One male seen July 7, 1909, on the Sturgeon River, some ten miles to the northwest.
30. *Chen hyperborea*. SNOW GOOSE.—But one specimen seen. Very rare.
31. *Branta canadensis*. CANADA GOOSE.—A very common migrant; great flocks seen each spring and fall. They nest about sixty miles west of here.
32. *Branta nigricans*. BLACK BRANT.—Seen but twice; very rare in this immediate locality.
33. *Botaurus lentiginosus*. BITTERN.—Quite common along the sloughs and marshy lands, where it nests.
34. *Ardea herodias*. GREAT BLUE HERON.—Very rare in this immediate vicinity, but nests in large colonies some sixty miles to the southeast.
35. *Grus americana*. WHOOPING CRANE.—A very common migrant, stopping at least for part of the summer along the larger lakes. One nest was located, which was afterwards abandoned.
36. *Grus canadensis*. LITTLE BROWN CRANE.—Seen occasionally, but not known to nest here.

37. *Rallus virginianus*. VIRGINIA RAIL.—Very rare; identified but once.

38. *Porzana carolina*. SORA RAIL.—Their call is heard during the summer along nearly every slough and along the edge of every lake or pond that affords them a nesting site. I have found them nesting in bunches of grass growing in three feet of water, twenty yards from shore.

39. *Fulica americana*. COOT.—Very common, constructing its nest of rushes usually about six inches above the water in overflowed meadows and along the borders of lakes and ponds.

40. *Lobipes lobatus*. NORTHERN PHALAROPE.—I have seen but one specimen, brought in by a taxidermist.

41. *Steganopus tricolor*. WILSON'S PHALAROPE.—Only one pair seen, May 23, 1908.

42. *Philohela minor*. WOODCOCK.—I had this species reported to me both in the spring and fall of 1908, but did not observe them myself until July 1, 1909, when I saw six or eight along the edge of a wet meadow.

43. *Gallinago delicata*. WILSON'S SNIPE.—Very common. Their nests are found in wet hay meadows and marshy lands, consisting of merely a depression in the ground lined with a few grasses or without lining.

44. *Totanus melanoleucus*. GREATER YELLOW-LEGS.—Although not abundant, this species is fairly common, nesting in very wet sloughs in marshy lands. Observed young June 28, 1909.

45. *Totanus flavipes*. YELLOW-LEGS.—Less abundant than the last but seen quite often.

46. *Helodromas solitarius*. SOLITARY SANDPIPER.—Quite common here, almost as numerous as the Spotted Sandpiper. Found a nest in 1908 up 35 feet in a white birch tree, containing three young and one addled egg. The nest was a Robin's, probably two or three years old.

47. *Bartramia longicauda*. UPLAND PLOVER.—Very rare, only a few pairs having been seen.

48. *Actitis macularia*. SPOTTED SANDPIPER.—Very common along the edges of nearly every lake, usually in company with the Solitary Sandpiper.

49. *Oxyechus vociferus*. KILDEER.—Very common where there are lakes and ponds.

50. *Bonasa umbellus umbelloides*. GRAY RUFFED GROUSE.—Very common in the heavily wooded portion.

51. *Bonasa umbellus togata*. CANADIAN RUFFED GROUSE.—Very common; about as numerous as *B. umbellus umbelloides*. Saw several broods of both species during the summer of 1909, when they were more numerous than three years ago. Severe winters kill a great many of these birds. They feed largely in winter on poplar buds and any berries that remain on the bushes during the winter; especially the high-bush cranberry.

52. *Pediceetes phasianellus*. SHARP-TAILED GROUSE.—Very rare; seen but a few times and then only a few at a time.

53. *Zenaidura macroura carolinensis*. MOURNING DOVE.—Only one seen, on June 28, 1909.

54. *Circus hudsonius*. MARSH HAWK.—Quite common in the more open districts, especially in localities where the land is low and marshy.

55. *Accipiter velox*. SHARP-SHINNED HAWK.—Not very common.

56. *Accipiter cooperi*. COOPER'S HAWK.—Seen but once,—in May, 1907, near Edmonton.

57. *Astur atricapillus*. GOSHAWK.—Quite common; makes its home mostly in the deeply wooded portions of the country.

58. *Buteo borealis calurus*. WESTERN RED-TAIL.—Quite common in the more open portions; very few in this immediate wooded locality.

59. *Buteo swainsoni*. SWAINSON'S HAWK.—Very rare in this immediate locality, but nests some twelve miles to the westward.

60. *Buteo platypterus*. BROAD-WINGED HAWK.—Fairly common, where they nest preferably in birch trees at a low elevation.

61. *Archibuteo lagopus sancti-johannis*. ROUGH-LEGGED HAWK.—Quite common.

62. *Aquila chrysaetos*. GOLDEN EAGLE.—Fairly common in the wooded portions where they nest in the tallest spruces, or more commonly in poplars.

63. *Haliaeetus leucocephalus*. BALD EAGLE. Not as common as *A. chrysaetos*. A nest was located in top of large poplar tree, up sixty feet, which contained nearly full-fledged young June 29, 1909. This nest was near a very large lake.

64. *Falco rusticolus*. GRAY GYRFALCON.—Rare. Seen but once, which was during the severe winter of 1906-07.

65. *Falco columbarius richardsoni*. RICHARDSON'S PIGEON HAWK.—Seen here each year, but quite rare.

66. *Falco sparverius*. SPARROW HAWK.—Quite common; more numerous in the semi-wooded portions and where the country is partially settled than in the uninhabited deep woodlands.

67. *Asio accipitrinus*. SHORT-EARED OWL.—Seen but once, June 7, 1909, in the edge of a large swamp.

68. *Cryptoglaux acadica*. SAW-WHET OWL.—Only one seen. I was attracted to it one day in the winter of 1907-08 by the chatter of about fifty Canada Jays. I immediately saw it was a Saw-whet and added the skin to my collection.

69. *Bubo virginianus pallescens*. WESTERN HORNED OWL.—Fairly common in the deep woods where it appropriates an old hawk's nest as a suitable place to rear its young.

70. *Nyctea nyctea*. SNOWY OWL.—Somewhat rare in this locality although a nest was found with six eggs, which two days later became six little fluffy balls of down. This was June 10, 1909.

71. *Surnia ulula caparoch*. HAWK OWL.—These birds were very common during the severe winter of 1906-07, but have been quite rare since. One nest was found in 1909 with six eggs, in a dead stub in a spruce swamp.

72. **Ceryle alcyon.** BELTED KINGFISHER.—Extremely rare, having been seen but a few times. Once a bird came within a few feet of the house and sat perched in a tree for several minutes.

73. **Dryobates villosus leucomelas.** NORTHERN HAIRY WOODPECKER.—Fairly common here, at certain times only.

74. **Dryobates pubescens nelsoni.** NORTHERN DOWNY WOODPECKER.—Fairly common.

75. **Picoides arcticus.** ARCTIC THREE-TOED WOODPECKER.—Quite common, from early fall until late in spring.

76. **Sphyrapicus varius.** YELLOW-BELLIED SAPSUCKER.—The most common of all the Woodpeckers. Nests generally in live white poplar trees, anywhere from four feet to fifty feet from the ground. I have found several sets of eggs where incubation was very much advanced when there were only three eggs, so presume they were complete sets.

77. **Ceophloeus pileatus abieticola.** NORTHERN PILEATED WOODPECKER.—Very rare; seen only in deep woodlands.

78. **Colaptes auratus luteus.** NORTHERN FLICKER.—In the summer of 1906 these birds were very scarce; by 1908 they were very common, and during the summer of 1909 were more numerous than during 1908.

79. **Chordeiles virginianus henryi.** WESTERN NIGHTHAWK.—Very common. Nests on some hill in the edge of the woods where they deposit their two eggs on the bare ground.

80. **Archilochus colubris.** RUBY-THROATED HUMMINGBIRD.—Very rare; seen but a few times.

81. **Tyrannus tyrannus.** KINGBIRD.—Very common, nesting in small trees or on the tops of old burned stubs.

82. **Sayornis phoebe.** PHOEBE.—Very common, nesting in barns, deserted houses, or under the bank of some stream; raises two broods.

83. **Sayornis saya.** SAY'S PHOEBE.—Several birds seen in the yard one day only.

84. **Myiochanes richardsoni.** WESTERN WOOD PEWEE.—Very common, placing its nest either on a horizontal limb or in the fork of an upright branch. The nest is much larger than that made by the eastern form.

85. **Empidonax flaviventris.** YELLOW-BELLIED FLYCATCHER.—Very rare. Seen only during the summer of 1906, near Edmonton, where I secured a specimen and photographed the nest and eggs.

86. **Empidonax minimus.** LEAST FLYCATCHER.—Very numerous. Their nests are placed in small trees or bushes at any elevation above three feet from the ground.

87. **Cyanocitta cristata.** BLUE JAY.—Quite common, but not as numerous as *P. canadensis*. Last year they nested within one hundred yards of the house.

88. **Perisoreus canadensis.** CANADA JAY.—Very common, nesting in February, March, or April, according to the severity of the winter. The nest is located either in a willow or evergreen tree, usually spruce, anywhere from seven to thirty feet up.

89. *Corvus corax principalis*. NORTHERN RAVEN.—Somewhat rare. Seen only during spring or fall.

90. *Corvus brachyrhynchos*. CROW.—Very common in the older and more settled parts but rarely seen or heard in the deep woods.

91. *Molothrus ater*. COWBIRD.—Very numerous, following cattle and horses, flying upon their backs and eating mosquitoes.

92. *Zanthocephalus zanthocephalus*. YELLOW-HEADED BLACKBIRD.—Very rare; seen but once, which was in the spring of 1909.

93. *Agelaius phoeniceus fortis*. THICK-BILLED REDWING.—Very numerous. Nests in same manner as the eastern form.

94. *Sturnella magna neglecta*. WESTERN MEADOWLARK.—The song of this bird is very much different from that of the eastern form, it having more of a blackbird-like call, and is much sweeter. They are becoming quite common.

95. *Icterus galbula*. BALTIMORE ORIOLE.—During the summer of 1906 these birds were very scarce but are now becoming more numerous, even penetrating the more heavily wooded sections.

96. *Euphagus carolinus*. RUSTY BLACKBIRD.—Nearly everywhere common but nowhere numerous. Usually nest along some slough or creek where they place their nests from three to ten feet above the water. The male of a pair which were nesting in a small slough near my house was suddenly taken away to appease the hunger of some young Goshawks. The female soon mated again, and this time they chose a birch tree in the deep woods, about one hundred yards from the slough, where they raised their brood undisturbed.

97. *Euphagus cyanocephalus*. BREWER'S BLACKBIRD.—Somewhat more numerous than the preceding. Their nests are usually placed on the ground, in a brushpile or hollow tree, or at a low elevation in bushes.

98. *Quiscalus quiscula æneus*. BRONZED GRACKLE.—Very common. Many nests are placed in dead stubs, where a cavity has been made, either by some woodpecker or by a fire.

99. *Hesperiphona vespertina*. EVENING GROSBEEK.—Quite rare. I located a nest in June, 1908, which contained a dead full-fledged young male. The nest was up 40 feet in a white birch tree.

100. *Pinicola enucleator leucura*. PINE GROSBEEK.—Very common here during the winter only, when they may be seen in large flocks feeding on poplar buds.

101. *Carpodacus purpureus*. PURPLE FINCH.—Very common. These birds do a great deal of singing while on the wing.

102. *Loxia leucoptera*. WHITE-WINGED CROSSBILL.—Very rare; seen but once, in edge of a deep spruce swamp.

103. *Leucosticte tephrocotis*. ROSY FINCH.—Rare; seen only during the winter, usually in company with Pine Grosbeaks.

104. *Acanthis linaria*. REDPOLL.—Very numerous during the late fall, winter, and early spring.

105. *Astragalinus tristis*. GOLDFINCH.—Very numerous during the

summer of 1906, but somewhat scarce during the summer of 1907; since then they have been very rare.

106. *Spinus pinus*. PINE SISKIN.—Very common. These birds remain in flocks even while nesting; no less than six pairs are almost continually around the house. When I first noticed them carrying nesting material they picked out fine rootlets from the garden; then, about a week later, they carried away numerous feathers and mouthfuls of hair. I watched their flight but could not locate their nests as the woods here are extremely dense.

107. *Plectrophenax nivalis*. SNOWBUNTING.—Very numerous in the fall, winter, and early spring; always seen in large flocks, generally in the open fields.

108. *Calcarius lapponicus*. LAPLAND LONGSPUR.—Quite common during spring and fall. I have no knowledge of their breeding here.

109. *Poecetes gramineus confinis*. WESTERN VESPER SPARROW.—Very common in the open woodlands and clearings.

110. *Passerculus sandwichensis alaudinus*. WESTERN SAVANNAH SPARROW.—One of our most common sparrows, frequenting the more open districts.

111. *Ammodramus nelsoni*. NELSON'S SPARROW.—Only fairly common, frequenting the low marshy hay meadows.

112. *Zonotrichia leucophrys*. WHITE-CROWNED SPARROW.—Common only during spring and fall migration. I do not know whether it nests in this locality.

113. *Zonotrichia albicollis*. WHITE-THROATED SPARROW.—This is one of our most common sparrows, nesting in the deep woods as well as in the more open districts. Its nest is located either in a tangle of brush or near some fallen tree. Their most beautiful song, to me, is a sweet whistling call of *Oh see-me me me me me*; sometimes only *Oh see me*, and again *Oh see*.

114. *Spizella monticola ochracea*. WESTERN TREE SPARROW.—Very numerous here during spring and fall migration but to my knowledge it does not breed near.

115. *Spizella passerina*. CHIPPING SPARROW.—Quite common, especially in the vicinity of evergreens.

116. *Spizella pallida*. CLAY-COLORED SPARROW.—One of our most numerous sparrows, preferring the more brushy deciduous undergrowth where it places its nest, either on the ground or near it in some low bush.

117. *Junco hyemalis*. SLATE-COLORED JUNCO.—Very numerous. Prefers the mossy swamps in which to build its nest, although I have found it nesting within fifty feet of the house under the edge of an artificial bank. Two broods are reared each year.

118. *Melospiza melodia*. SONG SPARROW.—Very common along the more open streams and open swampy lands.

119. *Melospiza georgiana*. SWAMP SPARROW.—Fairly common in the wet hay sloughs and along wet and marshy runs.

120. *Passerella iliaca*. FOX SPARROW.— Very common, and one of our sweetest, if not the sweetest singer of the whole sparrow family. They seem to prefer the wooded districts where there is an abundance of thick deciduous undergrowth.

121. *Passer domesticus*. ENGLISH SPARROW.— When I saw the city of Edmonton for the first time (in April, 1906) there were but few of these birds to be seen anywhere, but now (summer, 1909) they number thousands. They are driving away such birds as the House Wren, Mountain Bluebirds, Juncos, White-throated Sparrows, etc., which used to nest in abundance in the streets and in the back yard of many houses.

122. *Zamelodia ludoviciana*. ROSE-BREADED GROSBK.— Very common, especially in the deep woods and partially open woodlands. Less common in the more open sections.

123. *Piranga ludoviciana*. WESTERN Tanager.— Very rare; have seen it but a few times in this locality.

124. *Petrochelidon lunifrons*. CLIFF SWALLOW.— Very abundant during the summer of 1908; over one hundred nests were built on the end of one small barn. But during the summer of 1909 they were very scarce, the reason for which is not evident.

125. *Hirundo erythrogastra*. BARN SWALLOW.— A very common summer visitant.

126. *Iridoprocne bicolor*. TREE SWALLOW.— Nowhere abundant but nearly everywhere common.

127. *Riparia riparia*. BANK SWALLOW.— Very rare in this immediate locality but quite common along the Saskatchewan River about thirty miles distant.

128. *Bombycilla garrula*. BOHEMIAN WAXWING.— Very common during the spring and fall, but I do not know of their nesting in this locality.

129. *Bombycilla cedrorum*. CEDAR WAXWING.— Very common. Nesting usually in low willow bushes, generally near water. I have seen their nests built only a few inches above the water, in a willow projecting out over a small stream.

130. *Lanius borealis*. NORTHERN SHRIKE.— Very rare; seen but a few times. I do not know of their nesting near here.

131. *Vireosylva olivacea*. RED-EYED VIREO.— Very common. I do not believe there were less than ten pairs to every quarter section in the wooded districts.

132. *Vireosylva philadelphia*. PHILADELPHIA VIREO.— I consider this bird very common although not as common as the Red-eye. They breed in this locality but I have never located their nests.

133. *Vireosylva gilva swainsoni*. WESTERN WARBLING VIREO.— Only fairly common. A nest was found in a birch tree, up about thirty-five feet, near a running stream.

134. *Mniotilta varia*. BLACK AND WHITE WARBLER.— Very rare, having been seen only in two different years. I do not know as to their breeding here.

135. *Vermivora peregrina*. TENNESSEE WARBLER.—Nowhere common, although a few pairs nest in the immediate vicinity.

136. *Dendroica aestiva*. YELLOW WARBLER.—Quite common, nesting in low bushes and small birch trees.

137. *Dendroica coronata*. MYRTLE WARBLER.—Quite common during spring and fall, but I have not found them nesting near here.

138. *Dendroica maculosa*. MAGNOLIA WARBLER.—Very common during spring and fall migrations, but I have not found them nesting.

139. *Dendroica striata*. BLACK-POLL WARBLER.—Very rare; has been seen only a few times.

140. *Seiurus aurocapillus*. OVEN-BIRD.—Very numerous. I would estimate that there were at least eight pairs to the quarter section in the deep woods, where they build their nests.

141. *Seiurus noveboracensis notabilis*. GRINNELL WATER-THRUSH.—Quite numerous during the spring migration and one has been singing in my back yard ever since he arrived last spring. I do not know as to their nesting but should not imagine they would spend the summer here and not nest.

142. *Geothlypis tolmiei*. MACGILLIVRAY'S WARBLER.—Last year I was of the opinion that this species was very rare, but this year they have been very common. I have found at least six pairs within a radius of two hundred yards. They nest in the low deciduous underbrush, placing their nests within a few inches of the ground.

143. *Geothlypis trichas*. MARYLAND YELLOW-THROAT.—Very common along the wet, marshy sloughs and hay meadows, where it usually nests.

144. *Setophaga ruticilla*. REDSTART.—Very common. Nesting in low bushes and trees. I found one nest which after having been completed was entirely covered on the outside with down taken from the deserted nest of a domestic goose.

145. *Anthus pensilvanicus*. PIPIT.—Quite common in the spring when they are seen in the open portions of the country in large flocks.

146. *Dumetella carolinensis*. CATBIRD.—Rare. I have seen less than a half-dozen pairs in four years, and but one nest.

147. *Troglodytes aëdon*. HOUSE WREN.—Very common, rearing two broods.

148. *Sitta canadensis*. RED-BREASTED NUTHATCH.—Very rare. Seen only in deep woods where I presume it nests.

149. *Penthestes atricapillus*. CHICKADEE.—Very common, nesting generally in holes excavated by itself, but sometimes appropriating the deserted nest of some woodpecker.

150. *Penthestes hudsonicus*. HUDSONIAN CHICKADEE.—Very rare; seen only a few times, in deep tamarack swamps. I presume they nest here.

151. *Regulus satrapa*. GOLDEN-CROWNED KINGLET.—Very rare; seen but a few times.

152. *Hylocichla fuscescens salicicola*. WILLOW THRUSH.—Very common.

153. *Hylocichla aliciae*. GRAY-CHEEKED THRUSH.— Very rare; seen only during migration and then very seldom.

154. *Hylocichla ustulata swainsoni*. OLIVE-BACKED THRUSH.— The most common of the thrushes. It places its nest from two to twenty-five feet above ground.

155. *Hylocichla guttata pallasii*. HERMIT THRUSH. — Very rare. Seen only during migration.

156. *Planesticus migratorius*. ROBIN.— Very common. This bird nests almost as abundantly in the deep woods as in the more open and settled portions. Two broods are usually raised.

157. *Sialia currucoides*. MOUNTAIN BLUEBIRD.— Very common in the open portions of the country but never seen in the heavily wooded sections. Two broods are raised.

THE BIRDS OF COLORADO — THIRD SUPPLEMENT.

BY WELLS W. COOKE.

THE original 'Birds of Colorado' was published in 1897 as Bulletin No. 37 of the Colorado State Agricultural Experiment Station. It was followed a year later by the first supplement as Bulletin No. 44 of the same institution, and the second supplement was published in 1900 as Bulletin No. 56. The original bulletin enumerated 363 species as occurring in Colorado, of which 230 were known to breed in the State. The next year the total was increased to 374 and the breeders to 236. The year 1900 showed 387 species known to occur in the State, with 243 breeders.

The present publication withdraws 12 of these 387 as having been admitted to the State list on insufficient evidence or as not now considered valid forms. At the same time it recognizes 22 additional species as entitled to a place in the State list. Thus the present known avifauna of Colorado totals 397 species — a number probably exceeded by only two States, California and Texas. It is interesting to note that of these 22 additions, 9 had been mentioned in the second supplement as likely to occur in Colorado, while the other 13 are unexpected additions or arise from the recognition of subspecific forms. The number of species now known to breed in

Colorado is 248. Among the species dropped from the State, the following five had been counted among the breeders: *Phalænoptilus nuttalli nitidus*, *Astragalinus psaltria arizonæ*, *Spizella passerina*, *Dendroica æstiva sonorana*, and *Sitta carolinensis*. The list of breeders has had ten additions: *Marila americana*, *Marila vallisneria*, *Marila affinis*, *Pediæcetes phasianellus columbianus*, *Dryobates villosus*, *Cyanocitta cristata*, *Agelaius phæniceus neutralis*, *Icterus spurius*, *Peucæa cassini*, and *Vireo belli*.

The Bibliography of Colorado Ornithology.

The original bulletin contained the titles of 182 articles on Colorado birds, to which were added 15 in the first supplement and 28 in the second — a total of 225 titles. Publications on Colorado ornithology have become increasingly abundant during the past few years and the following pages mention 114 titles, nearly all of which have appeared within the last nine years, *i. e.*, half as many articles have been written about Colorado birds in the last nine years as in the preceding seventy years. The statement was made in the original bulletin, that 23 titles had been omitted as being only incidental references to Colorado birds. This number can now be increased by 62 additional articles that make some statements or contain some records of Colorado birds, but are not considered of enough importance to be listed here individually.

The bibliography of Colorado ornithology stands at present therefore as follows.

More important titles to 1900	.	.	.	225
Additional titles 1900-1909	.	.	.	118
Less important titles	.	.	.	91
Total	.	.	.	434

The following list contains in chronological order, the more extended and important articles on the birds of Colorado that have been published since 1900, and also a few issued previously that were not noted in 'Birds of Colorado.'

Abert, J. W. Report of the expedition led by Lieutenant Abert on the upper Arkansas and through the country of the Camanche Indians in the fall of the year 1845. Journal of Lieutenant J. W. Abert, from Bent's Fort to St. Louis in 1845. 29th. Cong., First Session, Sen. Doc. VIII, No. 438, 1846, 1-75.

Notes on several species of birds seen on a journey from the mouth of the Purgatory to Raton Pass.

Abert, J. W. Notes of a military reconnoissance from Fort Leavenworth in Missouri to San Diego, in California, including part of the Arkansas, Del Norte and Gila Rivers, by Lieut. Col. W. H. Emory. Appendix No. 6. Notes of Lieut. J. W. Abert. 30th Cong., First Session, Exec. Doc. No. 41, 1848, 386-546.

Contains a list of birds found in the vicinity of Bent's Fort, and additional notes on those seen between Bent's Fort and Raton Pass over nearly the same road as that travelled the previous year. Had these two reports by Lieut. Abert been available when the original 'Birds of Colorado' was written, there would have been several changes in the statement of who first recorded each species in Colorado. Abert's two reports together contain the first records for the State of thirteen species.

Allen, J. A. Ornithological notes from the West, II, Notes on the birds of Colorado. American Naturalist, VI, 1872, 342-351, 404.

A narrative account of the birds seen on the trip, containing the same notes that were published more at length in Bull. Mus. Comp. Zool., III, 1872, 113-183.

Anthony, A. W. Secondary migration of birds. Zoe, I, 1891, 379-381.

Records the fact that the White-crowned Sparrow in southwestern Colorado, raises its two broods at different altitudes.

Breninger, G. F. American and Mexican Crossbills. Nidologist, I, 1894, 99-101.

Extended notes on the nest and nesting habits in El Paso County.

Chamberlain, C. The Water Ouzel at home. Nidologist, I, 1894, 163-164.

Nesting habits as observed near Golden.

Dawson, W. Some western horizons. No. II. Wilson Bulletin, VI, 1899, 49-50.

A list of the birds seen at Julesburg. Contains the first record for the State of the Piping Plover.

Burnett, W. L. The Indigo Bunting in Colorado. Condor, II, 1900, 90.

A party of eight or ten at Fort Collins, the spring of 1900.

Dille, F. M. Nesting of the Eastern Bluebird at Denver, Colorado. Condor, II, 1900, 88.

A pair nested there in 1899.

Felger, A. H. The Mexican Cormorant in Colorado. Auk, XVIII, 1901, 189.

The first record for the State.

Osgood, W. H. New subspecies of North American birds. Auk, XVIII, 1901, 179-185.

Original description of *Lagopus leucurus altipetens*, with type-locality in Colorado. It has since been ascertained that this name is a synonym of *Lagopus leucurus*.

Burnett, W. L. The Rose-breasted Grosbeak in Colorado. Condor, IV, 1902, 94.

A pair near Loveland, June 1, 1902.

Dille, F. M. Western Blue Grosbeak in northern Colorado. Condor, IV, 1902, 94.

One at Altona — the most northern record for the State.

Felger, A. H. Colorado bird notes. Auk, XIX, 1902, 294.

New records of breeding and extensions of known range for several species.

Oberholser, H. C. A review of the Larks of the genus *Otocoris*. Proc. U. S. Nat. Mus., XXIV, 1902, 801-884.

Contains the first record for Colorado of *Otocoris alpestris praticola*.

Dille, F. M. Nesting dates for birds in the Denver District, Colorado. Condor, V, 1903, 73-74.

An extended list, giving the average dates for full sets of the first laying.

Henderson, J. Preliminary list of birds of Boulder County, Colorado. University of Colorado Studies, I, 1903, 233-237.

An unannotated list of 160 species.

Smith, H. G. Bell's Vireo (*Vireo bellii*) in Colorado. Auk, XX, 1903, 438.

The first record for the State.

Burnett, L. E. Whippoorwill (*Antrostomus vociferus*), a new bird for Colorado. Auk, XXI, 1904, 278-279.

One at Fort Collins, about September 14, 1903.

Dille, F. M. Eggs of Flammulated Screech Owl and Western Evening Grosbeak, taken in Estes Park, Colorado. Condor, VI, 1904, 50.

The eggs were taken in June, 1903, and for the Grosbeak are the first reported from the State.

Dille, F. M. A Sage Sparrow in Boulder County, Colorado. Condor, VI, 1904, 79.

This is the first record for the State, east of the mountains.

Henderson, J. Additional list of Boulder County birds, with comments thereon. University of Colorado Studies, II, 1904, 107-112.

Adds 46 species to his list of the previous year.

Warren, E. R. A Sandhill Crane's nest. Condor, VI, 1904, 39-40.

Eggs found June 5, 1903, in Gunnison County.

Henderson, J. Colorado notes. Auk, XXII, 1905, 421-422.

First record for the State of the Wood Thrush.

Howell, A. H. Scott's Sparrow in Colorado. Auk, XXII, 1905, 210.

The first record for the State.

Smith, H. G. The Blue Jay and other eastern birds at Wray, Yuma County, Colorado. Auk, XXII, 1905, 81-82.

The record of the Blue Jay is the first for the State.

Warren, E. R. Cassin's Sparrow in Colorado. Auk, XXII, 1905, 416.

First record for the State.

Ferrill, W. C. Biennial Report of the State Historical and Natural History Society of Colorado, December 1, 1904–November 30, 1906. Denver, 1906, 1–19.

Contains, on page 14, advance notice of new records for Colorado birds, given more in detail by H. G. Smith, Auk, XXV, 1908, 184–191.

Henderson, J. With the birds in northeastern Colorado. Wilson Bulletin. XIII, 1906, 105–110.

Short account of the birds seen on a wagon trip in Weld County.

Warren, E. R. A collecting trip to southeastern Colorado. Condor, VIII, 1906, 18–24.

Extended field notes on 84 species, observed principally in Baca County.

Warren, E. R. *Contopus virens* in Colorado. Condor, VIII, 1906, 130.

The first record for the State.

Felger, A. H. Ross's Snow Goose in Colorado. Auk, XXIV, 1907, 211–212.

First record for the State.

Gilman, M. F. Magpies on the La Plata. Condor, IX, 1907, 9–12.

Extended account of the nesting habits.

Gilman, M. F. Migration and nesting of the Sage Thrasher. Condor, IX, 1907, 42–44.

As observed in southwestern Colorado.

Gilman, M. F. Some birds of southwest Colorado. Condor, IX, 1907, 152–158, 194–195.

Extended field notes on 120 species observed in the vicinity of Fort Lewis, La Plata County.

Henderson, J. Colorado notes. Condor, IX, 1907, 198.

New records for several of the rarer species of Colorado birds.

Hersey, L. J. and Rockwell, R. B. A new breeding bird for Colorado; the Cassin Sparrow (*Peucaea cassini*) nesting near Denver. Condor, IX, 1907, 191–194.

The first breeding record of the bird for the State.

Oberholser, H. C. A new *Agelaius* from Canada. Auk, XXIV, 1907, 332–336.

Describes a new form as *Agelaius phæniceus arctolegus*, and records a specimen from Colorado. This subspecies has not as yet been accepted by the A. O. U. Committee.

Rockwell, R. B. The Woodhouse Jay in western Colorado. Condor, IX, 1907, 81–84.

Rockwell, R. B. Some Colorado notes on the Rocky Mountain Screech Owl. Condor, IX, 1907, 140–145.

Warren, E. R. Photographing Magpies. Condor, IX, 1907, 5–9.

Reproductions of several photographs taken at Crested Butte.

Warren, E. R. An interesting occurrence of the Canyon Wren. Condor, IX, 1907, 111.

Near Cheyenne Wells — the most eastern record for the State.

Burnett, W. L. Another Cañon Wren record for Colorado. Auk, XXV, 1908, 87. One at Longmont — the most northeastern record for the State.

Rockwell, R. B. Nesting of the Western Horned Owl in Colorado. Condor, X, 1908, 14-17.

Rockwell, R. B. The Red-winged Blackbirds of Colorado. Condor, X, 1908, 93.

First record for the State of *Agelaius phoeniceus neutralis*.

Rockwell, R. B. An annotated list of the birds of Mesa County, Colorado. Condor, X, 1908, 152-180.

Notes on 154 species.

Sclater, W. L. The winter birds of Colorado. Ibis, 1908, 443-450.

Briefly annotated list of 78 species.

Smith, H. G. Random notes on the distribution of some Colorado birds, with additions to the State avifauna. Auk, XXV, 1908, 164-191.

Contains the first records for Colorado of *Dryobates villosus villosus*, *Junco hyemalis oreganus* and *Vireo vicinior*, and field notes on 32 other species, with many extensions of known range.

Warren, E. R. Northwestern Colorado bird notes. Condor, X, 1908, 18-26.

Field notes on 93 species seen during a five month's wagon trip.

Cary, M. New records and important range extensions of Colorado birds. Auk, XXVI, 1909, 180-185.

Adds *Cistothorus stellaris* to the State list and extends the known range of more than thirty species.

Cooke, W. W. Some new birds for Colorado. Auk, XXVI, 1909, 314.

Adds four species to the State list.

Dille, F. M. Notes of occurrence and nesting of certain species additional to the 'Birds of Colorado.' Auk, XXVI, 1909, 86-88.

Field notes on 11 species.

Felger, A. H. Colorado notes. Auk, XXVI, 1909, 85-86.

Field notes on three species.

Felger, A. H. Annotated list of the water birds of Weld, Morgan and Adams counties, Colorado, south to the first sectional line below the fortieth parallel. Auk, XXVI, 1909, 272-291.

Enumerates 79 species and adds the records of 29 others from neighboring parts of the State.

Frey, J. W. Random bird notes from Chaffee County, Colorado. Condor, XI, 1909, 70.

Field notes on 21 species.

Henderson, J. An annotated list of the birds of Boulder County, Colorado. University of Colorado Studies, VI, 1909, 219-242.

A briefly annotated list of 216 species, with a bibliography.

Hersey, L. J. and Rockwell, R. B. An annotated list of the birds of the Barr Lake District, Adams County, Colorado. Condor, XI, 1909, 109-122.

Enumerates 206 species taken within an area only fifteen miles in diameter.

Rockwell, R. B. The history of Colorado ornithology. Condor, XI, 1909, 24-32.

An account of the collectors who have worked in the State and the sections covered by their explorations.

Rockwell, R. B. The use of Magpies' nests by other birds. Condor, IX, 1909, 90-92.

Warren, E. R. Notes on the birds of southwestern Montrose County, Colorado. Condor, XI, 1909, 11-17.

Field notes on 114 species, with many extensions of the previously known range.

Warren, E. R. Some interesting Colorado records. Condor, XI, 1909, 33.

Notes on three species.

Less extended notes on Colorado birds will be found in the following articles.

Trippe, American Naturalist, VIII, 1874, 429-430.

Chambers, American Naturalist, X, 1876, 373.

Packard, American Naturalist, XII, 1878, 54.

Stone, Ornithologist and Oölogist, VI, 1881, 45-46, 67.

Smith, Ornithologist and Oölogist, IX, 1884, 76.

Anthony, Nidologist, II, 1895, 66-67.

Taylor, Nidologist, IV, 1896, 6.

Lowe, Nidologist, IV, 1897, 70.

Burnett, Condor, II, 1900, 89.

Jones, Wilson Bulletin, No. 33, 1900, 12.

Burnett, Condor, III, 1901, 114.

Henderson, Wilson Bulletin, VIII, 1901, 45-46.

Lowe, Auk, XVIII, 1901, 276.

Fisher, Condor, IV, 1902, 70.

Smith, Auk, XIX, 1902, 290.

Burnett, Condor, V, 1903, 156.

Dille, Condor, V, 1903, 79.

Felger, Auk, XX, 1903, 65 and 70.

Henderson, Wilson Bulletin, X, 1903, 74-75.

Warren, Wilson Bulletin, X, 1903, 87-91.

Bergtold, Auk, XXI, 1904, 78.

Henderson, Wilson Bulletin, XI, 1904, 27 and 92.

Henderson, Auk, XXI, 1904, 486.

Bailey, Condor, VII, 1905, 112.

Bishop, Condor, VII, 1905, 141-143.

Felger, Auk, XXII, 1905, 421.

Henderson, Auk, XXII, 1905, 82 and 315-316.

Hopkins, Auk, XXIII, 1906, 461.

Felger, Condor, IX, 1907, 110.

Felger, Auk, XXIV, 1907, 342.

- Henderson**, Condor, IX, 1907, 162.
Henderson, Auk, XXIV, 1907, 440-442.
Knaebel, Auk, XXIV, 1907, 101.
Rockwell, Condor, X, 1908, 182.
Test, Auk, XXV, 1908, 226.
Bergtold, Auk, XXVI, 1909, 79 and 196-198.
Cary, Auk, XXVI, 1909, 312.
Felger, Condor, XI, 1909, 68-69.
Felger, Auk, XXVI, 1909, 191.
Richards, Condor, XI, 1909, 101.
Rockwell, Condor, XI, 1909, 33.
Warren, Auk, XXVI, 1909, 311-312.

The History of Colorado Ornithology.

The following additions have been made to the list of Colorado birds since the second appendix was published in 1900.

Dawson, Wilson Bulletin, VI, 1899, 50. *Ægialitis meloda* taken at Julesburg.

Felger, Auk, XVIII, 1901, 189. *Phalacrocorax vigua mexicanus* taken near Denver.

Oberholser, Proc. U. S. Nat. Mus., XXIV, 1902, 820-828. *Otocoris alpestris praticola* taken near Denver.

Keyser, Birds of the Rockies, 1902, 315. *Phalaropus fulicarius* taken by Preble at Loveland.

Smith, Auk, XX, 1903, 438. *Vireo belli* taken near Denver.

Burnett, Auk, XXI, 1904, 278. *Anrostomus vociferus* taken at Fort Collins.

Smith, Auk, XXII, 1905, 75. *Cyanocitta cristata* at Wray.

Howell, Auk, XXII, 1905, 210. *Aimophila ruficeps scotti* taken at Trinidad.

Warren, Auk, XXII, 1905, 416. *Peucea cassini* taken near Springfield.

Henderson, Auk, XXII, 1905, 421. *Hylocichla mustelina* at Yuma.

Warren, Condor, VIII, 1906, 130. *Myiochanes virens* taken near Springfield.

Felger, Auk, XXIV, 1907, 211. *Chen rossi* taken near Longmont.

Rockwell, Condor, X, 1908, 93. *Agelaius phoeniceus neutralis* taken near Denver.

Smith, Auk, XXV, 1908, 185-189. *Dryobates villosus* taken near Wray; *Junco hyemalis oreganus* taken near Denver; *Vireo vicinior* taken at Lamar.

Cary, Auk, XXVI, 1909, 180-185. *Cistothorus stellaris* taken in the San Luis Valley, and *Pediactes phasianellus columbianus* in western Colorado.

Cooke, Auk, XXVI, 1909, 314. *Sterna hirundo* by Osterhout at New Windsor; *Butorides virescens* by Preble at Loveland; *Spizella pusilla arenacea* and *Vermivora chrysoptera* by Patten at Yuma.

Recapitulation.

Total species credited to Colorado in 1900	.	.	.	.	.	387
To be withdrawn from this number	.	.	.	.	.	12
Correct Colorado list in 1900	.	.	.	.	.	375
Added since then.						
1899. W. L. Dawson	1	1905. E. R. Warren				1
1901. A. H. Felger	1	1905. J. Henderson				1
1902. H. C. Oberholser	1	1906. E. R. Warren				1
1902. L. S. Keyser	1	1907. A. H. Felger				1
1903. H. G. Simth	1	1908. R. B. Rockwell				1
1904. L. E. Burnett	1	1908. H. G. Smith				3
1905. H. G. Smith	1	1909. M. Cary				2
1905. A. H. Howell	1	1909. W. W. Cooke				4
Total Colorado list, 1909	.	.	.	.	.	397

The Birds of Colorado.

Colymbus auritus. HORNED GREBE.—Two near Barr, May 5, 1906 (Hersey and Rockwell).

Larus californicus. CALIFORNIA GULL.—One seen in 1905 at Coventry (Warren).

Larus franklini. FRANKLIN'S GULL.—One October 17, 1907, at Barr (Hersey and Rockwell).

Xema sabini. SABINE'S GULL.—A flock of six September 15, 1907, near Boulder (Henderson). Four specimens taken September 13–October 31, 1908 at Barr (Hersey and Rockwell).

Sterna forsteri. FORSTER'S TERN.—Twelve pairs were found breeding at Barr, May 19, 1900 (Felger).

Sterna hirundo. COMMON TERN.—The second supplement prophesied that this species would sometime be added to the list of Colorado birds, since it is a regular visitant to Kansas and Nebraska and has been taken at Cheyenne, Wyo. This prophecy is now fulfilled by the capture of a specimen, May 14, 1908, at New Windsor by G. E. Osterhout. The bird was sent to the Biological Survey for identification.

Phalacrocorax vigua mexicanus. MEXICAN CORMORANT.—The first record for Colorado is a specimen taken October 15, 1899, at Smith's Lake near Denver (Felger).

Mergus serrator. RED-BREASTED MERGANSER.—A mounted specimen was seen at La Veta (Cary), and the catalogue of the National Museum records a specimen taken at Fort Massachusetts [= Fort Garland]. These are the second and third records west of the front range.

Marila americana. REDHEAD.—This species can now be added to the list of the breeding birds of Colorado as it is known to have nested at Barr Lake, Adams County (Hersey and Rockwell).

Marila vallisneria. CANVAS-BACK.—This also joins the breeding birds, since eggs were found July 4, 1900, at Barr Lake (Felger).

Marila affinis. LESSER SCAUP DUCK.—A few breed at Barr Lake (Hersey and Rockwell). A new breeding record for the State.

Marila collaris. RING-NECKED DUCK.—One taken at Coventry in April, 1906 (Warren). This is the first record west of the main range.

Harelda hyemalis. OLD-SQUAW.—One at Longmont, about November 20, 1903 (Smith). Five specimens at different times taken in the vicinity of Denver (Felger).

Oidemia deglandi. WHITE-WINGED SCOTER.—Several additional records: near Longmont, October 20, 1901 (Henderson); Loveland, October 11, 1903 (Bergtold); LaSalle, October 24, 1904 (Smith); near Denver, six or more on September 14, 1907 (Henderson).

Chen rossii. ROSS'S GOOSE.—An addition to Colorado birds. One December 23, 1906 near Longmont (Felger).

Plegadis guarauna. WHITE-FACED GLOSSY IBIS.—Additional records are: Barr, May 25-31, 1907 and April 4-June 21, 1908 (Hersey and Rockwell); two additional specimens near Denver (Felger); one near Norwood, Montrose County, September 21, 1907 (Warren).

Mycteria americana. WOOD IBIS. Two August 30, 1902 near Denver (Felger).

Herodias egretta. AMERICAN EGRET.—One seen near Denver April 26 and 27, 1907 (Rockwell). One specimen taken at Barr (Hersey and Rockwell).

Egretta candidissima. SNOWY HERON.—Several more records: Taberquache Park, April 15, 1906 (Warren); Naturita, one, 1908 (Warren); near Kremmling, May 17, 1907 (Warren); LaVeta (Cary); near White River P. O., 1905 (Cary); Springfield, two reported (Warren); Salida, May 22, 1908 (Frey); near Denver, May 11, 1907; May 9-10, 1908; June 13, 19, 28, 1908 (Rockwell); La Salle, Salida and Denver (Felger). Fort Collins and White River P. O. seem to be the most northern localities for the species in Colorado.

Butorides virescens. GREEN HERON.—Added to the Colorado list by Edward A. Preble of the Biological Survey who saw one at Loveland July 23, 1895.

Nyctanassa violacea. YELLOW-CROWNED NIGHT HERON.—A second record for the State is that of a party of five seen May 1, 1908, at Salida (Warren).

Grus mexicana. SANDHILL CRANE.—A recent record of nesting is a set of eggs found June 5, 1903, in Gunnison County at 8000 feet (Warren).

Rallus virginianus. VIRGINIA RAIL.—Winters at Barr (Hersey and Rockwell).

Porzana carolina. CAROLINA RAIL.—One found dead on the surface of the ice near the terminal moraine of Arapahoe Glacier, September 1903, at 12,000 feet altitude (Henderson).

Fulica americana. COOT. A few winter at Barr (Hersey and Rockwell).

Phalaropus fulicarius. RED PHALAROPE.—This is the second species added by Edward A. Preble to the State list. He captured a specimen

July 25, 1895, at Loveland. The finding of these two species by Mr. Preble is one of the strange circumstances connected with Colorado ornithology. W. G. Smith and Wm. Osburn lived at Loveland and collected there assiduously for years. Mr. Preble visited there one week and saw two species not detected by the other collectors.

Gallinago delicata. WILSON'S SNIFE.—Several nests and sets of eggs found each of the past five years on the plains near Boulder (Dille).

Ereunetes mauri. WESTERN SANDPIPER.—Not common migrant at Barr (Hersey and Rockwell).

Calidris leucophæa. SANDERLING.—One May 31, 1908, and several the fall of 1908 at Barr (Hersey and Rockwell).

Helodromas solitarius cinnamomeus. WESTERN SOLITARY SANDPIPER.—The early publications on Colorado ornithology included this species among the breeding birds of the State, and the same reference has been continued by subsequent writers. As neither eggs nor young birds have ever been reported from the State the assumption of breeding rests on the presence of the bird in pairs during the summer season. Late investigations have shown that many non-breeding Solitary Sandpipers remain through the summer far south of the breeding grounds, and also that the southward migration of breeding birds begins soon after the first of July. In the light of these facts it must be considered, that though the species probably does breed in Colorado, yet the actual breeding is not yet proven.

Bartramia longicauda. UPLAND PLOVER.—Several heard at night in migration in northwestern Colorado August 6-14, 1905. One seen August 9, 1907, at the head of Smith Fork in the West Elk Mountains, Gunnison County, was at an unusually high altitude—7000 feet, while the record is the most southwestern for the State (Cary). Eggs June 28, 1907, near Barr Lake (Hersey and Rockwell).

Charadrius dominicus. GOLDEN PLOVER.—Additional records are: one at Newcastle, October 5, 1902 (Bishop); one near Denver, May 17, 1907 (Rockwell).

Ægialitis semipalmata. SEMIPALMATED PLOVER.—One April 27, 1907, near Denver (Rockwell).

Ægialitis meloda. PIPING PLOVER.—Added to the Colorado list by the record of one taken May 16-17, 1899, at Julesburg (Dawson).

Podasocys montanus. MOUNTAIN PLOVER.—The most western record for the State seems to be that of a specimen taken by Henshaw June 10, 1873, near the site of the present town of Del Norte.

Colinus virginianus. BOB-WHITE.—Sixty years ago Lieut. J. W. Abert spent a summer at Bent's Fort on the Arkansas and he says that quail like those of the eastern United States were then to be found in that neighborhood. There can be no doubt that these birds were native.

Arenaria interpres morinella. RUDDY TURNSTONE.—Three at Barr, September 9, 1907 (Hersey and Rockwell).

Callipepla squamata. SCALED QUAIL.—Common in Baca County east nearly to the Kansas line and north to Lamar. It is claimed that the birds

have been working eastward and that they did not reach eastern Baca County until about fourteen years ago (Warren). Two near Mattison, Elbert County, May 4, 1909 (Cary).

Lophortyx californicus. CALIFORNIA QUAIL.—Introduced at Grand Junction and has spread up the Gunnison Valley to Hotchkiss where it was abundant in August, 1907. Introduced at Mancos and spreading in Montezuma County. One seen near Dolores June 25, 1907 (Cary).

Tympanuchus americanus. PRAIRIE CHICKEN.—Gradually extending westward in eastern Colorado as the native sod gives place to farms and wheatfields. It now breeds at least as far west as Yuma, Wray County (Patten). Nested in 1907 and 1908 near Barr (Hersey and Rockwell). This is the most western record in the United States.

[**Tympanuchus pallidicinctus.** LESSER PRAIRIE CHICKEN.—A few Prairie Chickens are reported as still present in southeastern Baca County. These should be the above form, but no specimens have been secured to settle the matter.]

Pediceetes phasianellus campestris. PRAIRIE SHARP-TAILED GROUSE.—As stated below, the form of western Colorado is *columbianus*. The bird of the plains of Colorado has always been referred to *campestris* and for the present that is probably the best that can be done. The final settlement of the proper name for the Sharp-tail of northeastern Colorado may prove difficult, as *campestris* is probably now extinct in the State.

Pediceetes phasianellus columbianus. COLUMBIAN SHARP-TAILED GROUSE.—It has at last been ascertained that this is the form which occurs in Colorado west of the main range. The species is known now to be present locally over much of western and southwestern Colorado south to McElmo Cañon, Montezuma County, and to Pagosa Springs, Archuleta County (Cary). A specimen taken February 12, 1907, at Castle Rock was sent to the Biological Survey for examination proves to be this form.

Meleagris gallopavo silvestris. WILD TURKEY.—As late as 1906 it was reported that a few Turkeys still inhabited southern Las Animas County (Warren). They are entered as the above form, but conclusive proof is still lacking that this form has ever occurred in Colorado. The records left by Say and Abert prove conclusively that in their day, the range of the Turkey extended without a break from Oklahoma, up the Arkansas and the Purgatory to Raton Pass and thence down the Canadian to Oklahoma. Under those conditions it is fair to presume that the birds of southeastern Colorado were the same form as those farther east.

Meleagris gallopavo merriami. MERRIAM'S TURKEY.—Almost if not quite extinct now in Colorado. The latest reports come from near Pagosa Springs and Mancos (Cary).

Zenaidura macroura carolinensis. MOURNING DOVE.—Wintered at Navajo Springs, La Plata County (Gilmore). One seen at Beulah January 4, 1904, and a few remained there the winter of 1905-6 (Jones).

Aluco pratincola. BARN OWL.—One near Mancos and one near Fort Lewis (Gilmore). One at Denver, March 29, 1907, and one at Holly, May 24, 1907 (Smith).

[**Strix varia.** BARRED OWL.—The known range of this species has been carried much further west by a specimen taken March, 1905, at Bear Lodge, Crook County, Wyo., and sent to the Biological Survey for identification.]

Strix occidentalis. SPOTTED OWL.—Two in spring near Fort Lewis (Gilman).

Otus asio maxwelliae. ROCKY MOUNTAIN SCREECH OWL.—A pair nested in 1906 on Dry Willow Creek, Yuma County; one of the birds taken June 9, 1906, was sent to the Biological Survey for identification (Smith). Thus this form occurs not only in the mountains but far out on the plains, almost to the Kansas line.

Otus flammeola. FLAMMULATED SCREECH OWL.—One specimen, near Fort Lewis (Gilman). A mounted specimen at Glenwood Springs, presumably taken in the State (Cary). A set of eggs is recorded in the catalogue of the egg collection of the National Museum as taken in Estes Park June 21, 1891. Two sets of eggs were taken at the same place in June, 1903 (Dille).

[**Bubo virginianus arcticus.** ARCTIC HORNED OWL.—This form has been credited to Colorado by several writers; since the great variations in color became known of the Western Horned Owl, *pallescens*, doubt has arisen as to whether the true Arctic Horned Owl ever occurs in the State. For the present at least it better be dropped from the Colorado list.]

Geococcyx californianus. ROAD-RUNNER.—One at Los Animas August, 1907 (L. R. Cooke). The northeastern limit of the range in Colorado is a few miles south of Lamar (Cary). One, March 15, 1907, at Shawnee, on the Platte at 8125 feet altitude; another October 12, 1907, at Marshall Pass, about 10,000 feet altitude (Hersey). Both of these are much higher than the usual range of the species.

[**Coccyzus americanus.** -YELLOW-BILLED CUCKOO.—The whole of Colorado is within the known range of the western Yellow-billed Cuckoo, *occidentalis*. As the actual record on which the eastern bird was admitted can never be known, it seems best to drop it from the Colorado list.]

Coccyzus erythrophthalmus. BLACK-BILLED CUCKOO.—One May 21, 1904, at Wray (Smith). One at the same place May 22, 1909 (Cary).

Dryobates villosus. HAIRY WOODPECKER.—A pair were nesting June 9, 1906, at Dry Willow Creek, Yuma County; they were identified by the Biological Survey as intermediates but nearer the eastern bird, thus introducing this form to the Colorado fauna (Smith). Other and later specimens show that this is the form of the Arkansas Valley as far west as Fowler (Smith).

[**Dryobates pubescens.** DOWNY WOODPECKER.—Since no specimen of this form is known to have been taken in the State, it better be dropped from the list of Colorado birds. It is interesting in this connection to note

that a Downy Woodpecker taken at Holly in extreme eastern Colorado is *homorus*, the same as the bird of the mountains.]

***Dryobates scalaris bairdi*.** TEXAS WOODPECKER.— A long extension of the known range to the eastward results from the finding of this species in Baca County; four were taken April 17, 1905, and one May 12, 1905, near Springfield (Warren). Several at Swink, October 29, 1908 (Smith).

***Centurus carolinus*.** RED-BELLIED WOODPECKER.— Seen at Yuma, October 1, 2 and 3, 1906 (Patten).

***Colaptes auratus luteus*.** NORTHERN FLICKER.— One, October 5, 1906, at Yuma (Patten). One, October 24, 1904, Hall Valley, Park County, at 10,000 feet (Felger).

Lieut. J. W. Abert states in his report that when he visited Colorado in 1846, he found the Flicker with yellow wings common all along the Arkansas River in Kansas and that they continued to be common westward in Colorado at least to the mouth of the Purgatory River. Abert ascended the Arkansas to the site of the present town of La Junta, and then went southwestward to Raton Pass. It was not until he was half way between La Junta and Trinidad that he saw the Red-shafted Flicker, and here both the yellow and the red forms were common. A great change has taken place in the distribution of these two forms during the sixty years that have elapsed since Abert's Colorado visit. Now the yellow-winged form is extinct in the whole Arkansas Valley of Colorado and the red-shafted form has extended its range eastward throughout this whole region and far into Kansas.

***Antrostomus vociferus*.** WHIPPOORWILL.— The first record for Colorado is that of one taken September 14, 1903, at Fort Collins and sent to the Biological Survey for identification (Burnett).

***Cypseloides niger borealis*.** BLACK SWIFT.— A female in the collection of Geo. B. Sennett is labeled as taken at Denver, June 26, 1884. This is the most northeastern record for the State.

***Aëronautus melanoleucus*.** WHITE-THROATED SWIFT.— Found at Pawnee Buttes in northeastern Weld County (Henderson). Common breeder in Chimney Cañon near Sterling (Cary).

***Selasphorus platycercus*.** BROAD-TAILED HUMMINGBIRD.— Hummingbirds have been seen at Springfield May 24, 1908 (Alexander) and at Yuma May 31, 1905, September 5, 1908, and October 3, 1908 (Patten). In each case the records probably belong to the above species, and these seem to be the first records of hummingbirds from the plains of eastern Colorado.

***Selasphorus rufus*.** RUFOUS HUMMINGBIRD.— One, August 27, 1904, near Antonito (Bailey).

***Stellula calliope*.** CALLIOPE HUMMINGBIRD.— The two previous records of this species for Colorado are each of single birds; it is surprising therefore that several should have been seen in one day August 27, 1904, at Antonito, by Vernon Bailey of the Biological Survey.

Tyrannus tyrannus. KINGBIRD.—Not uncommon during migration in northwestern Colorado. Steamboat Springs, Craig and Lay (Warren). Near Rifle, near Boggs Crossing, Meeker, and Edwards's Sheep Camp in Routt County (Cary). One was seen in June at Navajo Springs, Montezuma County (Gilman). This is apparently the most southwestern record in the United States.

Tyrannus verticalis. ARKANSAS KINGBIRD.—The average date of arrival at Yuma is May 6, and of departure September 16; the extremes are April 30, 1905, and September 23, 1904 (Patten). Breeds in Baca County (Warren) — the most southeastern breeding record in Colorado.

Myiarchus cinerascens. ASH-THROATED FLYCATCHER.—One in 1907 at Douglas Spring near Dotsero (Warren). A great extension eastward of the known range results from the capture of one May 25, 1905, at Gaume's Ranch, Baca County (Warren).

Myiochanes virens. WOOD PEWEE.—The one taken May 12, 1905, near Springfield, gives the first record for Colorado (Warren).

Otocoris alpestris leucolæma. DESERT HORNED LARK.—The statement is made in the original bulletin that "the literature of the Horned Larks in Colorado is more mixed than that of any other bird; *alpestris*, *cornuta*, *occidentalis* and *chrysolæma* have all been recorded for the State, but according to present ideas only *leucolæma* and *arenicola* really occur in Colorado." Changes in nomenclature during the past twelve years have made the matter still more complex. It has been found that *arenicola* is a synonym of *leucolæma* and must be dropped, while two new names *praticola* and *hoyti* have to be taken into consideration.

According to present ideas all the breeding birds and almost all of the winter birds, in spite of the wide variation in color, are referable to *leucolæma*.

[**Otocoris alpestris arenicola.** DESERT HORNED LARK.—This name is dropped from the Colorado list as being a synonym of *leucolæma*.]

Otocoris alpestris praticola. PRAIRIE HORNED LARK.—Accidental, once at Denver (Oberholser). First and only record for Colorado.

[**Otocoris alpestris hoyti.** HOYT'S HORNED LARK.—Breeds near the Arctic Circle and comes south in winter to the northern United States. It has been taken south to Camp Floyd, Utah, and to Emporia, Kans., and hence undoubtedly occurs in winter on the plains of northeastern Colorado.]

Cyanocitta cristata. BLUE JAY.—It seems strange in view of the commonness of the bird in Wray County, that it should have been so lately added to the Colorado list. The number of 'The Auk' for January, 1905, contains records by Smith and Henderson of its occurrence at Wray and at Yuma. The species is now known to occur locally along the whole eastern edge of the state, from Holly to Julesburg; it is a common breeder at Wray and wintered there 1907-8; it ranges west to Yuma, where it was first seen in 1903, and has been noted in summer from May 19 to November 1, but is not yet known to remain through the winter. It has also been recorded west to Limon (Felger) and to Springfield (Alexander). A

possible explanation of its late addition to the Colorado bird list may be that the species has moved west with the settlements through Kansas and Nebraska and has only lately reached Colorado.

Aphelocoma woodhousei. WOODHOUSE'S JAY.—Common November 26–29, 1907, at Gaume's Ranch, Baca County, and undoubtedly winters in that vicinity (Cary). This is the most eastern record for Colorado.

Cyanocephalus cyanocephalus. PISON JAY.—This species was found by Warren to be quite common, April and May, 1905, among the cedars of Baca County. Cary found them common in the same region November 26–29, 1907, but there is no proof as yet that they breed in the vicinity. Noted at Yuma, September 26–October 13, 1906 (Patten).

Dolichonyx oryzivorus. BOBOLINK.—So many records have been contributed the last few years that it seems probable the species is becoming more common in the State. Some of these records are: Beulah, May 18, 1906 (Jones); Salida, May 14, 1908 (Frey); Middle Park, near the Troublesome River, July 11, 1897 (Smith); near Steamboat Springs, June 1–10, 1907, probably breeding (Warren); Meeker, probably breeding, 1905 and 1906 (Hopkins); Boulder, many seen for four consecutive years, 1902–1905, during May and July, showing that they have become established as regular migrants; not yet known to breed in this vicinity (Henderson). No sure breeding records as yet in Colorado.

Agelaius phoeniceus fortis. THICK-BILLED REDWING.—Much information has been gathered the past few years in regard to the Red-winged Blackbirds of Colorado. Where only one form was recognized in 1897, there are now three forms, *fortis*, *neutralis* and *arctolegus*; while the typical form *phoeniceus* is now restricted to the eastern United States. The above form, *fortis*, breeds on the plains of Colorado east of the mountains, and also west in the foothills, at least to Estes Park at 7500 feet altitude. It winters on the plains from Denver southward.

Agelaius phoeniceus neutralis. SAN DIEGO RED-WING.—This form probably breeds in Colorado west of the main range and winters irregularly north at least to Grand Junction.

[**Agelaius phoeniceus arctolegus.** NORTHERN RED-WING.—This is a northern form, breeding north of the United States and coming south in winter to Colorado. A specimen was taken December 29, 1892, at Semper, and the form will probably prove not uncommon on the plains of north-eastern Colorado. This form has not yet been accepted by the A. O. U. Committee.]

Icterus spurius. ORCHARD ORIOLE.—Common summer resident at Wray, and breeds (Smith). This is the first breeding record for the State. Seen at Yuma, May 17 and 19, 1908, (Patten).

Icterus galbula. BALTIMORE ORIOLE.—Common summer resident at Wray and breeds (Smith). The first certain breeding record for Colorado. Seen at Yuma, May 22, 1905, May 22, 1906, May 24, 1907 (Patten).

Icterus bullocki. BULLOCK'S ORIOLE.—Has been noted as a common breeder, along the eastern edges of the State from Baca County to Yuma County.

Euphagus carolinus. RUSTY GRACKLE.—A small flock February 20, 1909, near Littleton (Richards).

Hesperiphona vespertina montana. WESTERN EVENING GROSBEEK.—Eggs taken in Estes Park in 1903 (Dille). Young just out of the nest, July 22, 1898, in Routt County (Smith).

Carpodacus mexicanus frontalis. CALIFORNIA LINNETT.—Not rare at Yuma (Patten). Breeds east to Gaume's Ranch, Baca County (Warren). This is the most eastern breeding record in the State.

Loxia leucoptera. WHITE-WINGED CROSSBILL.—A pair, August, 1906, at 8400 feet altitude on Upper Bear Creek, Clear Creek County (Knaebel).

Leucosticte tephrocotis. GRAY-CROWNED ROSY FINCH.—Two, February 15, 1903, Altona (Dille).

Leucosticte atrata. BLACK ROSY FINCH.—One, April 6, 1907, Sulphur Spring, Grand County (Warren).

Leucosticte australis. BROWN-CAPPED ROSY FINCH.—Two, January, 1906, and several January, 1907, near Fort Lewis; a pair on the summit of the La Plata Mountains June 24 and July 22 1906 (Gilman).

Astragalinus tristis. GOLDFINCH.—Specimens recently examined from the plains of eastern Colorado, from the foothills near Denver, and even from Livermore, within the lower foothills, all prove to be the eastern form.

Astragalinus psaltria. ARKANSAS GOLDFINCH.—The Colorado bird list in 1900 included this species and two subspecies. Since then it has been ascertained that the forms *arizonæ* and *mexicanus* represent merely plumage variations due to age. These two forms are therefore withdrawn from the list. The species ranges north to Meeker, where found common August, 1905 (Cary). East to Las Animas, July, 1892 (Fisher).

Calcarius ornatus. CHESTNUT-COLLARED LONGSPUR.—One, April 5, 1906, at Cortez (Gilman).

Rhynchophanes mccowni. McCOWN'S LONGSPUR.—Abundant breeder at Pawnee Buttes, June, 1909 (Cary).

Zonotrichia querula. HARRIS'S SPARROW.—One October 9, 1907, near Kit Carson, Cheyenne County (Smith). One October 22, 1908, New Windsor (Osterhout). These are the third and fourth records for the State.

Zonotrichia coronata. GOLDEN-CROWNED SPARROW.—A flock of fifteen at Salida April 19, 1908 (Frey). Second record for Colorado.

Zonotrichia albicollis. WHITE-THROATED SPARROW.—One, May 3, 1908, Yuma (Patten). Fourth record for the State.

Spizella passerina arizonæ. WESTERN CHIPPING SPARROW.—Specimens of the Chipping Sparrow taken in extreme eastern Colorado, at Springfield, Baca County, prove to be the western form, which is there a tolerably common breeder (Warren).

[**Spizella passerina.** CHIPPING SPARROW.—It seems probable in the light of the above record, that the typical eastern form does not occur in the State, and it will therefore be withdrawn from the Colorado list until some undoubted specimen is obtained.]

***Spizella pallida*.** CLAY-COLORED SPARROW.—Breeds south on the plains to Monon, Baca County (Warren).

***Spizella breweri*.** BREWER'S SPARROW.—Ranges east to Monon, Baca County and breeds (Warren). Common breeder at Yuma in 1909 (Cary). Seen at Sterling, July 1892 (Fisher).

***Spizella pusilla arenacea*.** WESTERN FIELD SPARROW.—Yuma, May 9–11, 1908 (Patten). First record for Colorado.

***Junco aikeni*.** WHITE-WINGED JUNCO.—Common November 27, 1907, at Gaume's Ranch, Baca County (Cary).

***Junco hyemalis*.** SLATE-COLORED JUNCO.—Two, April 6, 1905, Lamar (Warren).

***Junco hyemalis oregonus*.** OREGON JUNCO.—One near Denver, October 16, 1885 (Smith). First record for Colorado.

***Junco hyemalis montanus*.** MONTANA JUNCO.—One, November 27, 1907, Gaume's Ranch, Baca County (Cary). One of the most widely distributed Juncos in the State during the winter.

***Junco phænotus caniceps*.** GRAY-HEADED JUNCO.—One was taken January 18, 1904, at Boulder and sent to the Biological Survey for identification. Most northern record in winter.

***Amphispiza bilineata deserticola*.** DESERT SPARROW.—Tolerably common breeder at Gaume's Ranch, Baca County; taken there May 18–25, 1905 (Warren). This is a large extension of the known range eastward.

***Amphispiza nevadensis*.** SAGE SPARROW.—One, March 18, 1904, near Boulder (Dille). This is the first record in Colorado east of the front range.

***Peucaea cassini*.** CASSIN'S SPARROW.—It had been expected that this species would be found in Colorado, and the first record for the State came from the southeastern corner where it was most likely to occur—near Springfield, May 27, 1905 (Warren). But an entirely unexpected extension of the known range was the finding of the species breeding at Barr. Eggs were taken there July 14, 1907. (Hersey and Rockwell).

***Aimophila ruficeps scotti*.** SCOTT'S SPARROW.—One near Trinidad, September 17, 1903 (Howell). This is the first record for Colorado and the most northern record for this subspecies.

***Melospiza georgiana*.** SWAMP SPARROW.—One was taken October 2, 1907, near Mosca (Cary). This is the second record for the State and the first west of the mountains.

***Passerella iliaca schistacea*.** SLATE-COLORED SPARROW.—Three, spring of 1906, near Fort Lewis in southwestern Colorado (Gilman). These are the first reported from that part of the State.

***Pipilo maculatus montanus*.** MOUNTAIN TOWHEE.—Many years ago Thorne published the statement that this form sometimes occurred at Fort Lyon. That eastward record has lately been exceeded by the taking of a specimen April 28, 1905, at Monon, close to the Kansas line (Warren). One, taken at Lamar, May 17, 1907, by H. G. Smith was sent to the Biological Survey for identification. The Mountain Towhee is of course only a migrant on the plains.

Pipilo fuscus mesoleucus. CAÑON TOWHEE.— Abundant November, 1907, at Gaume's Ranch in northwestern Baca County and noted to the northward to Caddoa in the Arkansas Valley (Cary). These are the most eastern records in the State, though the species had previously been reported almost as far east at Watervale, August, 1906, and April, 1907 (Smith). 'The most northern record is that of the specimen collected at Boulder March 17, 1895 (Smith).

Oreospiza chlorura. GREEN-TAILED TOWHEE.— Occurs in migration on the plains almost to the Kansas line; common in spring in Baca County; Monon, May 3, 1905, and Springfield, May 11, 1905 (Warren). Seen at Yuma in the spring from May 3, 1906, to June 11, 1907, and in the fall from September 24, 1904, to September 30, 1908 (Patten).

Zamelodia ludoviciana. ROSE-BREADED GROSBEEK.— A pair near Loveland, June 1, 1902 (Burnett).

Guiraca caerulea lazula. WESTERN BLUE GROSBEEK.— Las Animas, July 1892, not rare (Fisher); Wray, a fairly common breeder (Smith); Yuma, seen each spring for the last five years, earliest May 17, 1907 (Patten); Altona, one, August 16, 1901 (Felger); Altona, several, about June 18, 1902 (Dille); Loveland, a pair June 7, 1902 (Burnett).

Passerina cyanea. INDIGO BUNTING.— One May 7, 1901, near Denver (Felger); one June 9, 1906, at Hugo (Ferrill).

Spiza americana. DICKCISSEL.— Not rare, July, 1892, at Sterling (Fisher).

Calamospiza melanocorys. LARK BUNTING.— Breeds south to Navajo Springs, La Plata County (Gilman); to Trinidad (Fisher); and to Baca County (Warren). In other words, the southern limit of the breeding range coincides quite closely with the southern boundary of Colorado. A very late migrant was seen November 7, 1907, at Saguache (Cary).

Piranga ludoviciana. WESTERN TANAGER.— Comes east regularly in migration to Yuma, where it has been noted in the spring from May 10 to June 4 and in the fall on October 5, 1908 (Patten).

Piranga erythromelas. SCARLET TANAGER.— One May 17, 1902, at Palmer Lake (Smith); one May 20, 1904, Pueblo (Smith); one June 4, 1904, Grand Junction (Rockwell).

Progne subis. PURPLE MARTIN.— Several, August, 1905, White River Plateau, 8000-9000 feet (Cary); one at 9000 feet July, 1907, Uncompahgre Plateau (Cary).

Bombycilla garrula. BOHEMIAN WAXWING.— Comes south on the plains to Yuma, where it was seen January 22, 1905, and January 17-18, 1907 (Patten).

Lanius borealis. NORTHERN SHRIKE.— South in winter almost to the southern boundary of the State; a few November, 1907, at Gaume's Ranch, Baca County (Cary); one at Earl, Las Animas County, November, 1907 (Cary). One at Silverton, October 28, 1893 (Loring).

Vireosylva olivacea. RED-EYED VIREO.— Fairly common spring and fall migrant at Yuma; extreme dates are May 18 and September 8 (Patten).

Lanivireo solitarius cassini. CASSIN'S VIREO.—Douglas Spring, Routt County, September 4, 1906 (Cary); Silverton, October 21, 1893 (Loring); near Creswell, Jefferson County, September 9, 1887 (Smith); near Denver, September 16, 1884 (Smith).

Lanivireo solitarius plumbeus. PLUMBEOUS VIREO.—Solitary Vireos, presumably of this form, have been seen at Yuma in May of both 1905 and 1907 (Patten).

Vireo belli. BELL'S VIREO.—One, Denver, June 12, 1903 (Smith). This is the first record for Colorado. Later it was found as a fairly common breeder along the eastern edge of the State at Holly, Wray and Julesburg (Smith). One at Yuma, May 8, 1906 (Patten).

Vireo vicinior. GRAY VIREO.—Four specimens were taken at Lamar, May 16–20, 1907 (Smith). This is the first and only record for Colorado and an extension two hundred miles to the northeast of the previously known range.

Mniotilta varia. BLACK AND WHITE WARBLER.—One May 23, 1907, at Holly (Smith).

[**Protonotaria citrea.** PROTHONOTARY WARBLER.—Has been credited to the State (Auk, XXIV, 1907, 342) on the strength of three specimens said to have been taken near Monument and at Pueblo. There is evidently a mistake in the locality where the specimens were obtained for the Prothonotary is a swamp warbler and would find no congenial surroundings near Pueblo to say nothing of the pine clad hills of Monument. The species better wait for further proof, before it takes a place in the Colorado list.]

Vermivora chrysoptera. GOLDEN-WINGED WARBLER.—One May 25, 1906, at Yuma (Patten). This is the first record for the State.

Vermivora virginiae. VIRGINIA'S WARBLER.—A large extension of the known range to the eastward is the result of the one taken May 3, 1905, at Monon, Baca County (Warren).

Vermivora peregrina. TENNESSEE WARBLER.—Two, May 20–21, 1904, Wray (Smith); abundant at the same place May 21–23, 1909 (Cary). Common May, 1907, at Holly, Manzanola, Kit Carson and Julesburg (Smith).

Compsothlypis americana usneæ. NORTHERN PARULA WARBLER.—One near Denver, May 5, 1904 (Smith); a flock of about a dozen May 27, 1907, at Kit Carson (Smith).

[**Dendroica æstiva sonarana.** SONORA YELLOW WARBLER.—Later investigations make it probable that all the Yellow Warblers of Colorado should be classed under the one form *æstiva*. The above form *sonarana* is therefore withdrawn from the State list.]

Dendroica cærulescens. BLACK-THROATED BLUE WARBLER.—One, September 18, 1903, Wray (Smith). Seen at Yuma, September 19, 1904; September 10, 1906 and October 6, 1906 (Patten).

Dendroica coronata. MYRTLE WARBLER.—One, December 31, 1907, Holly (Smith). This is the first winter record for Colorado.

Dendroica magnolia. MAGNOLIA WARBLER.—One, May 12, 1905, near Springfield (Warren). One May 22, 1907, Holly (Smith). Two, May 21, 1909, near Wray.

Dendroica gracæ. GRACE'S WARBLER.—Several May, 1907, Pagosa Springs (Cary).

Dendroica nigrescens. BLACK-THROATED GRAY WARBLER.—One July, 1892, Trinidad (Fisher); several September 4-8, 1906, Douglas Spring, Routt County (Cary). The most northern record in western Colorado.

Dendroica townsendi. TOWNSEND'S WARBLER.—One August 14, 1894, Estes Park (Fisher); one August 24, 1906, near Bagg's Crossing, Routt County (Cary).

Seiurus aurocapillus. OVENBIRD.—Seen May 18, 1906, and September 18, 1906, at Yuma, (Patten).

Oporornis tolmiei. MACGILLIVRAY'S WARBLER.—Several May, 1905, Springfield (Warren). Noted at Yuma each May for the last four years (Patten). Sterling, June 1-2, 1909 (Cary).

Geothlypis trichas occidentalis. WESTERN YELLOW-THROAT. — One July, 1905, in Middle Park near Hot Sulphur Springs (Cary). This is a higher altitude than usual.

[**Icteria virens.** YELLOW-BREASTED CHAT.—This form was admitted to the original list through a misunderstanding. It has no Colorado record and should be dropped.]

Setophaga ruticilla. REDSTART.—A few August 25-27, 1906, near Bagg's Crossing of the Snake River, Routt County (Cary); several May 17-24, 1908, Salida (Frey).

Oroscoptes montanus. MOUNTAIN MOCKINGBIRD.—One, April 21, 1905, near Springfield (Warren); one October 10, 1904, Yuma (Patten).

Mimus polyglottos leucopterus. WESTERN MOCKINGBIRD.—Common on the plains of southeastern Colorado, north to Yuma (Patten); abundant June, 1906, at Pawnee Buttes, northeastern Weld County (Henderson). Common at Sterling in 1909 (Cary). One May 23, 1907, near McCoy at 6800 feet altitude — the most northwestern record (Warren).

Dumetella carolinensis. CATBIRD.—A few breed near Fort Lewis, La Plata County; one at Mancos May 3, 1906 (Gilman).

Catherpes mexicanus conspersus. CAÑON WREN.—Observed by the parties of the Biological Survey in many localities in southwestern Colorado, east to the plains and north to the Grand River. The most northwestern record is that of the one seen September 12, 1906, near Rangely, Rio Blanco County (Cary). Along the southern part of the State it has been traced east to Baca County, where one was seen November 27, 1907, at Gaume's Ranch (Cary) and near Cheyenne Wells, one November 22, 1906 (Warren). The most northern records east of the mountains are of those obtained at Golden February and October, 1907 (Test) and at Longmont, October 20, 1907 (Burnett).

Thryomanes bewicki bairdi. BAIRD'S WREN.—Records for this species have gradually accumulated until now it is known to be more common in

southwestern Colorado than it is east of the range, where it was first discovered in the State. It breeds locally but not uncommonly in western Colorado and has been observed north to Rangely, where two were noted, September 17, 1906, and to Elk Springs, Routt County, where one was seen September 11, 1906 — the most northwestern record for the State (Cary). East of the mountains the species has been recorded from Colorado Springs, Loveland, Pueblo, Fort Lyon, Holly, and from Gaume's Ranch, Baca County. It had been supposed that these records from the plains referred to the plains form *cryptus* and the one from Gaume's Ranch was so recorded by Cary (Auk, XXVI, 1909, 184), as had been done previously by Ridgway (Birds N. & Mid. Am., III, 1904, 555), for all the Bewick Wrens of Colorado. An examination of the specimen taken by Smith at Holly, May 23, 1907, shows it to be *bairdi* and makes it evident that all Bewick Wrens in Colorado belong to the one form.

Cistothorus stellaris. SHORT-BILLED MARSH WREN.—One was shot October 23, 1907, and another seen the next day near Mosca — the first record for Colorado and the only record for the species west of the mountains (Cary).

Certhia familiaris montana. ROCKY MOUNTAIN CREEPER.—Yuma, October 22–25, 1904 (Patten).

Sitta carolinensis nelsoni. ROCKY MOUNTAIN NUTHATCH.—The former lists of Colorado birds have given the white-bellied Nuthatches under two forms, *carolinensis* and *aculeata*. Both these names should be withdrawn and in their place the above name should be employed for all the white-bellied Nuthatches of Colorado.

Bæolophus inornatus griseus. GRAY TITMOUSE.—Common September 1906, in the Escalante Hills of Routt County — the most northern record for the State (Cary).

Psaltriparus plumbeus. LEAD-COLORED BUSH-TIT.—Two flocks, September 4 and 8, 1906, near Douglas Spring, Routt County — the most northern record for the State (Cary).

Polioptila cærulea obscura. WESTERN GNATCATCHER.—In 1897, there was no record for a Gnatcatcher in western Colorado. Now the records have multiplied until it is known locally from many places north to Grand Junction. Fairly common breeder near Cortez and near the Dolores River in southwestern Montrose County, June and July 1907 (Cary); Grand Junction, common, May 17, 1906 (Ferrill); Walsenburg, one, May 21, 1907 (Cary); Boulder, one May 12, 1905 (Henderson). This last is the most northern record for Colorado.

Myadestes townsendi. TOWNSEND'S SOLITAIRE.—Eggs July 27, 1906, near Arkins at 6200 feet altitude — nearly two thousand feet lower than usual (Cary); Gaume's Ranch, Baca County, abundant November 26–29, 1907 (Cary); noted in migration at Yuma May 24–25 and September 6 to November 5 (Patten).

Hylocichla mustelina. WOOD THRUSH.—One, May 27, 1905, at Yuma — the first record for the State (Patten).

***Hylocichla guttata*.** ALASKA HERMIT THRUSH.— Monon, Baca County, May 3, 1905 (Warren).

[***Hylocichla guttata pallasi*.** HERMIT THRUSH.— There seems to have been a misunderstanding or a mixing of specimens that served as the basis of the record on which this species was admitted to the Colorado list. All efforts to locate the Thorne specimens have proved unavailing and it seems best to withdraw the name from the State list.]

***Sialia sialis*.** BLUEBIRD.— Fairly common in extreme eastern Colorado, from the Arkansas River to the Platte, and breeds near Holly (Smith). Noted each year at Yuma, the extreme dates of observation being April 18 and November 1 (Patten). Denver, eggs June 21, 1899 (Dille).

***Sialia mexicana bairdi*.** CHESTNUT-BACKED BLUEBIRD.— Yuma, one February 28, 1906 (Patten).

***Sialia currucoides*.** MOUNTAIN BLUEBIRD.— Gaume's Ranch, Baca County, common November 26–29, 1907 (Cary); Springfield, March 1–22, 1908 (Alexander); Yuma, February 28, 1906, and March 18, 1907 (Patten).

THE SINGULAR CASE OF THE BLACK DUCK OF NORTH AMERICA.

BY JONATHAN DWIGHT, JR., M. D.

THE case of the Black Duck is one of extreme interest to many people, partly because the species is one of the best known of the North American water-fowl and partly because the naming of a new race has been productive of unexpected consequences. First a shuffle of the scientific names was found necessary and now the new 'race' itself seems to be based upon nothing more tangible than the adult birds, as becomes evident from the material I have gathered. The pitfalls, nomenclatural as well as ornithological, into which even the most eminent authorities may fall are singularly illustrated in a full discussion of the case. As yet, some facts have been missing and some misinterpreted, so that the whole story needs to be retold and from a new standpoint.

Th^e nomenclatural side may be very briefly dismissed here, as *it* has already been thoroughly discussed in the pages of 'The Auk' (Vol. XXVI, April, 1909, pp. 175–179). It was in 1902 (Auk, XIX,

April, 1902, pp. 183-188) that Mr. Brewster separated the birds of the northern part of the range of the Black Duck under the name *Anas obscura rubripes* or Red-legged Black Duck, restricting the name *obscura* to the southern birds. Presently it was discovered that the name *obscura* was preoccupied some twenty-five years by an Old World species, so, according to the rules of nomenclature, *obscura* had to be dropped as a synonym and *rubripes* took its place. This left the ordinary Black Duck without a name until Mr. Brewster provided the name *tristis*, so that the two races stand, up to date, as *Anas rubripes rubripes* and *Anas rubripes tristis*.

The ornithological side of the question has hitherto been presented only from the describer's standpoint and he has been unfortunate in lacking some trenchant facts that put the others in quite a new light. His characters for the Red-legged Black Duck (*rubripes*) are bright red legs and feet, a yellow bill, heavy streaking about the head and throat and large size; while the birds (*tristis* formerly *obscura*), from which the new form is separated, have brownish legs, dusky olive bills, and less streaking while they are smaller in size. Now, these differences are exactly the ones that distinguish old birds from young whether they occur in the United States or in Canada. My evidence on this point is conclusive for I have skinned and dissected fully fifty specimens representing many localities, north and south, besides examining dozens of others shot by friends or found hanging in the markets. It is rather singular that Mr. Brewster in his articles has said practically nothing of the differences between old and young because the plumages as well as the colors of the soft parts in old and young are quite different. They correspond to the characters that have been considered subspecific and due to geographical variation. This has been suspected but no one has been able to prove it, nor could it be proved from dried museum specimens in which the original colors and age are only matters of guess work.

For some years I have taken great pains to obtain the fresh material necessary for study. A series selected from many fresh specimens sent me from Long Island, New York, shows that the Black Duck, like many of the other ducks, slowly passes from the juvenal into the first winter plumage, a change in the color of the feet and bill taking place at the same time. The feet of grown young

birds, at first an olive-brown, become gradually reddened, and finally in the spring they are of nearly as bright a red as that of the adults, while the dusky bill brightens to greenish and then to yellow-green or yellow. There is nothing unusual in this change of color, which occurs in many species of ducks, as well as among other birds, and we know well how in the case of the Eiders and Scoters there is, in addition to brightening colors, a transformation in the shape and size of the bill. Once the adult colors of the soft parts are attained they are never lost, and so it is with the Black Duck — the bill of the adult is at all seasons of the year a bright greenish yellow and the feet a coral red, these colors dulling only a trifle after the breeding season. In females the colors are regularly duller than those of the males.

There is considerable variation in the time at which young birds acquire the red legs and yellow bill; some of them resemble adults as early as January while others are still dull in April. A very few laggards in vitality seem to remain immature during their first year, as is often the case with other species, but aside from plumage there are other earmarks of immaturity. The bones, the trachea and larynx and the sexual organs proclaim approximately the age of specimens carefully examined. It is worthy of note that the dusky head-markings of adults merely *average* darker than those of young birds, which more often have unspotted chins, but the variation in both old and young is considerable. The plumage of adults differs somewhat from that of young birds and it should be remembered, too, that young birds in unlike stages of plumage may be shot on the same day. It may be urged that these variations, due to age and season, belong only to the northern birds and that the southern birds never acquire the red legs and other characters of the supposed *rubripes*, but such is not the case. There are many difficulties to be overcome in obtaining breeding specimens which would of course settle the question at once. The males become exceedingly shy and difficult to find in the breeding season and nobody wants to slaughter brooding females even if nests be found. Moreover, the game-laws must be respected, especially by collectors. But before spring shooting was abolished some years ago on Long Island, New York, a number of freshly killed birds were sent me that scarcely needed dissection to prove them to be breeding birds. They were

shot at various dates in April and all had red legs. However, it was not until the present year that I secured the last link required in my chain of evidence. Through the courtesy of the Forest, Fish and Game Commission of New York State special permission was granted and an adult male, killed on Long Island, June 11, 1909, came fresh into my hands. This bird has the red legs and other characters supposed to belong to the northern 'race' alone, and should set at rest any lurking belief in the subspecific distinctness of *rubripes*. The specimen is in full postnuptial moult, and evidently was recently mated.

The opera-glass contingent seems to have missed an opportunity for making observations that would be of value, because some of them must have had a chance to see the color of the legs of summer ducks. I have noticed, without a glass, that the wild birds breeding about the Central Park lakes in New York City have red legs, but such evidence, derived from semi-domesticated water-fowl, is not convincing in itself alone. I would also call attention to the fallibility of trained gunners when a question of scientific importance is at stake. The very man who shot my June bird had previously assured me that the summer birds of Long Island did not have red legs! Yet, he like many other gunners knew there were two kinds of Black Ducks in winter.

Summed up in brief, the evidence shows that all young birds, both in Canada and along the Atlantic Coast of the United States, have brownish legs, while breeding adults from the same localities have red ones. Under these circumstances the 'Red-legged Black Duck' as a subspecies does not appear to have a leg left to stand on — not even a red one. If an ornithologist of Mr. Brewster's ability can go astray in his conclusions, what may not the rest of us do? His two articles should be read afresh to understand how easy it was to take the wrong path, and the episode should be a warning object lesson for all describers to take to heart. Now at last after much expenditure of energy the Black Duck (*Anas rubripes*) remains an undivided species ranging over eastern North America, and we have only to regret the loss of its time honored name *obscura* for which at present there seems to be no help.

The Florida Duck (*Anas fulvigula*), with its southwestern race *maculosa*, seems to be specifically distinct. It has a black marking

at the base of the bill and a median, angle-shaped line of buff on each tail feather that are lacking in the Black Duck, while the rich buff of the head and throat, immaculate on the chin and parts adjacent, and the broad ochraceous streakings of the body are rarely approached by its northern relative. The Texas race *maculosa* seems poorly differentiated from *fulvigula*; the dusky markings about the head are a trifle more extensive and the black at the base of the bill is less conspicuous as a rule. The adults of both have red legs.

It may be well to point out here an error in Ridgway's 'Manual' wherein the Black Duck and the Florida Duck are in the group 'Wing without any white band.' As a matter of fact, in both of these species there is a very distinct band tipping the feathers of the speculum and it is rarely absent even in females.

It is rather beyond the scope of the present paper to take up the two Mexican species (*Anas aberti* and *Anas diazi*) of the Black Duck group, but from descriptions there is certainly room for doubting their specific distinctness from *fulvigula*.

GENERAL NOTES.

Capture of an American Eider at Chicago.— There appear to be very few authentic records of the American Eider (*Somateria dresseri*) having been taken on Lake Michigan, so that its occurrence at Chicago may be of interest to readers of 'The Auk.'

On December 1, 1908, an individual of this species was shot by a fisherman over decoys set off the 55th Street Pier near Jackson Park, and was brought to me for identification. It proved to be an immature male in beautiful plumage. I made the skin and had the specimen positively identified by Dr. Ned Dearborn of the Field Museum of Natural History.— J. L. DEVINE, 5478 Ellis Avenue, Chicago, Ill. .

Breeding of the Least Bittern (*Ardetta exilis*) in Chester Co., Pa.— On June 6, 1909, while wading through a cat-tail swamp near Berwyn, Chester Co., Pa., two incomplete Least Bittern's nests were found and one bird seen. On visiting the place again on June 12, one of the nests was found completed, and contained 4 eggs. The nest was situated in a clump of

rushes (*Juncus effusus*) and cat-tails (*Typha latifolia*), 12 inches above water, which in that spot was about two feet deep. The cat-tails were bent over above the nest forming a partially covered arch. The nest itself was loosely, but firmly, constructed of rushes, and measured 9 inches across by 4 inches deep; a slight depression held the eggs. Although this species is a regular breeder in the Delaware River marshes of Delaware County, which borders Chester County on the east, and of Philadelphia County, which borders Delaware County on the north, as far as I have been able to ascertain, this constitutes the first breeding record for Chester County.—LEONARD S. PEARSON, *Wayne, Pa.*

The Black Rail in Maryland.—In 'The Auk' for April, 1909, p. 190, I mentioned that several specimens of the little Black Rail were said to have been taken on the Patuxent River in Maryland. Through the courtesy of Mr. W. F. Roberts, I am now able to give three records. Mr. Roberts, who was an associate member of the A. O. U. from 1888 to 1899, is an enthusiastic sportsman, has had long experience in rail shooting, and is thoroughly familiar with the habits of the various species in this vicinity. In a recent letter he says:

"For more than 25 years the writer has been cognizant of the regular occurrence of *Porzana jamaicensis* on the marshes of the Patuxent River, in the vicinity of Mt. Calvert, Md. It appears more reluctant to take wing than *P. carolina* and more are taken during October than September—the two months of rail shooting. They are never common, but I learn of several individuals every season and have the following record dates: Oct. 19, 1906; Sept. 22, 1907; and Oct. 12, 1908."

The only other record for this rail in Maryland with which I am familiar is that of a specimen presented to the National Museum by John Dowell. This bird (No. 97,717) was taken on Piscataway Creek, Prince George County, on September 25, 1877.—T. S. PALMER, *Washington, D. C.*

First Appearance of the Sanderling in the Vicinity of Detroit.—In August, 1908, the Sanderling (*Calidris arenaria*) was noted for the first time in the vicinity of this city. Specimens were taken by Messrs. W. C. Wood, Spicer, Jones, and the writer. With them came a White-rumped Sandpiper (*Actodromas fuscicollis*) which is the first autumn record for the county. The Sanderling reappeared May 16, 1909.—J. CLAIRE WOOD, *Detroit, Mich.*

Actodromas fuscicollis in Philadelphia County, Pa.—This species, which is rightly regarded by ornithologists as a rare transient in this vicinity, is mentioned in Warren's 'Birds of Pennsylvania,' revised edition, page 85, as a "very rare spring and fall migrant," and in Stone's 'Birds of Eastern Pennsylvania and New Jersey,' we learn (page 32) that it is a "rare or irregular transient," and also, on page 73, that "this species

probably occurs in small numbers during migrations...." This last is highly probable, as on this page Stone further states that it is not an uncommon transient on the New Jersey coast, for, like all of the *Limicola* that occur regularly in any numbers along this coast during migrations, their occurrence inland on the Delaware River and other streams is to be expected and looked for during and after severe and protracted northeast and southwest storms. This is a fact well known to sportsmen who take advantage of such occasions to go out after shore birds and other water fowls, and seldom do they return empty handed.

During the past several years I have devoted much of my time to the study of the water and shore birds, ferreting out the records of all that occur on the Delaware, but nowhere have I found any recent and reliable records of the occurrence of this species in this vicinity. There is a probability that gunners confuse it with the Pectoral Sandpiper, which it resembles, and this uncertainty of the identity of the species makes it almost impossible to ascertain anything definite regarding the bird's status from such sources.

The only records of the White-rumped Sandpiper's occurrence in this vicinity that I know of follow: —

A mounted bird in my collection — where it remained unidentified for several years — was picked up by my brother George E. Miller on October 7, 1901, at Port Richmond, this county, on the shore of a pond. The taxidermist who mounted it failed to ascertain the sex for me, but said it was very fat and in excellent condition. It is of course in fall or winter plumage.¹

At this locality on October 10, 1906, my brother George shot one but ruined it entirely as a specimen with a heavy charge of No. 6 shot, that tore and mutilated the bird. It, too, was in fall plumage and also in fine condition.

These are the only records of the White-rumped Sandpiper that I can vouch for *now* as occurring here, but further investigation may bring to light several others of hazy authenticity at present.— RICHARD F. MILLER, Frankford, Philadelphia, Pa.

The Spruce Partridge in the White Mountains.—Late in August, 1908, on descending the Crawford bridle path on Mount Clinton, just below the timber line, I came upon a female Spruce Partridge (*Canachites canadensis canadensis*) with a single chick about one third the size of its mother. The older bird was very tame. I walked within four feet of her as she stood upon a little knoll of moss, while the chick made its way nervously off into the forest. She was also strikingly tranquil. Once in a while, with a low, guttural note, she would ruffle her plumage for a moment and look at me

¹ Since the foregoing was written the bird has been presented to Dr. Witmer Stone, of the Academy of Natural Sciences of this city, in which institution it can now be seen. R. F. M.

with mild anxiety. But throughout my stay near her she did not move ten feet from the spot where I first saw her.

On July 18, 1909, about a quarter of a mile below the timber line, I found a female Spruce Partridge lying in the same path. When I had approached within a distance of about twenty feet, she raised herself slightly and four young, looking like average domestic chicks on the day of their hatching, ran out into the path. To my surprise they soon took flight, and with very rapid wing strokes and with dangling legs they quickly disappeared amongst the trees. The mother bird was more agitated than the one I had seen the year before, but showed none of the excitement so familiar in the mother Ruffed Grouse. I repeatedly stroked her back with my umbrella, and she seemed absolutely indifferent to this treatment.

Since the Crawford bridle path is one of the most frequented of the White Mountain trails and is travelled every season by hundreds of tourists many of whom camp and too many of whom are ruthless destroyers of wild life, it is remarkable that the Spruce Partridge retains its racial tameness in this region and, indeed, that it survives near the path at all.
—NATHAN CLIFFORD BROWN, *Portland, Maine.*

The Passenger Pigeon — Only One Pair Left.— Still clinging to my belief that the Passenger Pigeon will never again be seen in its wild state, I have felt a special interest in the remaining birds belonging to the Milwaukee and Cincinnati flocks which have been in confinement for many years. In my last remarks on this species (*Auk*, Vol. XXV, 1908, p. 18) I stated that the remnants of these flocks then numbered but seven birds (6 ♂, 1 ♀), with little or no chance of further reproduction. This number is now reduced to a single pair, and doubtless the months are numbered when this noble bird must be recorded as extinct.

Under date of August 9, 1909, Mr. A. E. Wiedring, who has had charge of the Milwaukee birds, writes that the remaining four males, which I saw in 1907, died between November, 1908, and February, 1909, and that he attributed the cause to tuberculosis. The specimens were not preserved, they being in very poor plumage and apparently going through a belated moult.

On July 29, 1909, Mr. S. A. Stephen, General Manager of the Cincinnati Zoölogical Company, wrote me that one of the two old males in the Gardens died in April, 1909, leaving one male, about twenty-four years old, and the female which came from Prof. Charles O. Whitman's flock in 1902, and now about thirteen years old, and unquestionably infertile. Mr. Stephen thought that the bird died simply of old age, there being no apparent signs of disease. The specimen was moulting and in too poor a condition to be saved.—RUTHVEN DEANE, *Chicago, Ill.*

The Black Gyr Falcon in Connecticut.— A fine female *Falco rusticolus obsoletus* was shot at Durham, Conn., Jan. 27, 1907, and sent to me and is

now in my collection. This specimen appears to be the only one known to have occurred in Connecticut.—JNO. H. SAGE, *Portland, Conn.*

The Acadian Flycatcher in Ontario.—The discovery of this bird (*Empidonax virescens*) in Ontario has long been expected by bird students and reports have at times been made of its occurrence only to be disproved when investigated. It is therefore perhaps a little strange that it should turn out to be probably a not uncommon resident of certain parts of the western peninsula of Ontario.

About fifty miles southeast of Detroit and only a few miles from Lake Erie there was formerly an immense black ash swamp, portions of which are still in existence, and it was in these, where the mosquitoes were of sufficient quantity to feed a large number of Flycatchers, that I found the Acadians on June 8 and 9 of this year. There was an undergrowth of saplings in the swamps and the birds apparently spent their time near the ground. Their conspicuous note attracted my attention at once and it was quite easy to secure specimens for identification.

I was walking through the country from west to east and as my plans included the covering of about fifteen miles a day, I had not much time for explorations on the side, but after finding these birds in two places about ten miles apart, I am convinced that there must be many other localities in that district where they nest. One of the specimens taken was a female with an egg almost ready for extrusion.—W. E. SAUNDERS, *London, Ont.*

European Starling Nesting at Princeton, New Jersey.—A pair of European Starlings (*Sturnus vulgaris*) nested in a large willow by the side of a tiny stream where the latter crosses Moore Street in Princeton. The young are now (July 7, 1909) out of the nest. I have not been able to get any further data concerning them but as I believe this to be the first record from this locality the fact is worth noting. My attention was first called to them by the peculiar purring sounds from the youngsters when a parent bird was near; having raised several broods by hand the sound was a familiar one to me. The old birds are very shy.—BRUCE HORSEFALL, *Princeton, N. J.*

The Meadowlark in Maine, and Other Notes.—The Meadowlark (*Sturnella magna*) has arrived here and is breeding (June 15, 1909) on this side of the Penobscot. It is one of the group of Alleghanian birds which are steadily pushing their way eastward across what was formerly a forest portion of the State. The advance of these birds is curious and should have been studied much more closely than it has been so far. The important point is the determination of how long one of our north-and-south flowing rivers like the Kennebec and the Penobscot holds a species in check. They seem very reluctant to cross a stream like the Penobscot,

here about a quarter of a mile wide. From five to fifteen years is required before species, well established in Bangor, come over here, just across the river, to breed. There have been Meadowlarks in Bangor for many years. Mr. Ora Knight states in his 'Birds of Maine' that he has known of their breeding in one place there as early as 1894. They have been exceedingly local, and Mr. Knight, in his book, which was published in 1908, speaks of knowing of only a few within a radius of forty miles — I speak from memory, but I think he says, five pairs. I have known of their breeding at the Hersey Farm, back of the city; at the Waterworks, two miles above the center; and this year in Hampden, five miles below the center. Last year my brother and father saw one on the Brewer side of the river, the first I had ever heard of being here. It was not seen again. If it bred at all, it was in a range of meadows so extensive that it was out of hearing from any travelled road.

This spring about the middle of May reports came to me from three quite separate localities of their being seen in Brewer. Also a fourth at Sebouis Lake, which tarried a day on an island and then departed, probably to Nova Scotia or northward. May 14, 15, 16, 17 I heard of Meadowlarks being seen. Just about a week later a small boy told me of finding a nest containing two eggs. He seemed to know the bird and gave a clear description of the nest and eggs. These eggs were taken by something, probably a boy, as no shells were left, and the child told me to-day that he had not seen the larks since. Last Saturday, however, June 12, my son discovered a nest with five eggs. Monday morning I went with him to photograph the nest. While we did not flush the old bird, there could be no doubt about the eggs being Meadowlark's. Both old birds, very shy indeed, were seen in the vicinity but would not come within a quarter of a mile of the nest. When we were a long way off, one of them took a flight of three fourths of a circle and dropped just behind the crest of the hill where the nest was, undoubtedly planning to run up to it stealthily. As we did not disturb the eggs and shall not visit the place again, there is a good chance for the young to hatch. (The nest reported from Hampden had well grown young on Sunday.) These young birds stand a good chance of growing up. Though in a field which will be mowed by machine after the Fourth, the nest is only two rods from the edge of a cow pasture where they would be perfectly safe. We are anxious to see the birds well established here and would regret having their attempt to breed defeated.

May 15, some thirteen miles east of Brewer, I saw a Red-headed Woodpecker (*Melanerpes erythrocephalus*). The only other instance I ever heard of in this region was in 1878, when my father killed an immature bird on Machias waters far east of here.

About the same time a young man wrote me to identify for him a bird which he had seen on a fence near the Brewer line, in a thickly settled farming district, miles from any heavy woods. He described it as about the size of a small crow with a tuft of scarlet feathers "which stuck out like a boy's scalp lock that will not lie down." I had no hesitation in calling

it a Pileated Woodpecker, though the locality was extraordinary and the bird is rare, in our near vicinity, even in our densest and oldest woods.—
FANNIE HARDY ECKSTORM, *Brewer, Maine.*

Note on the Red Crossbill and the Pine Finch in South Carolina.—

Having passed many winters in the Southern States without seeing either species, I was interested to find both the Red Crossbill (*Loxia curvirostra minor*) and the Pine Finch (*Spinus pinus*) common in South Carolina in the winter of 1908-1909. At Camden, Kershaw County, between December 12 and January 4, no bird note was to be heard so often as that of the Pine Finch except the Blue Jay's; and the bird occurred abundantly in and near the town, in parties of from three or four to about a dozen individuals. The Crossbill was not abundant, but I heard it nearly every day. Sometimes I heard it only, as it flew over head; sometimes I saw single individuals, again two or three. On January 1, at half-past seven in the morning, I saw five together at close range.

I went to Aiken, in the southwestern part of the State, on January 5. There I found the Pine Finch common but decidedly less so than it had been at Camden. From this time its numbers gradually diminished, and, when I left for the North, late in February, it had become uncommon. The Crossbill was also less in evidence at Aiken than at Camden. I first saw it at the more southern town on January 8, when I met with two. The largest number seen together was five, at 7.45 A. M., January 16. On January 23 two tarried for a short time in a pine distant but a few feet from my window; and this was the last of the Crossbill at Aiken for the season, so far as I could discover.—NATHAN CLIFFORD BROWN, *Portland, Maine.*

The Grasshopper Sparrow at Ottawa, Ontario.—On June 30, while prowling around in one corner of the Experimental Farm here, I heard a here unknown but to me familiar song. Its author allowed me to approach closely and to inspect him carefully with the glass. It was, as I knew immediately upon first hearing his song, a Grasshopper Sparrow (*Ammodramus saviannarum australis*), an old acquaintance of mine in the south. There were two birds there, both singing from the wire fence around a large timothy field. Next day I went there again to secure it, but could find it no more. But there is no mistake possible; I know the bird too well, having taken and prepared many when living in Maryland. This is quite an extension of the range of this species, comparatively unknown in Canada. As stated on authority of W. E. Saunders in Macoun's 'Catalogue,' it is fairly common only in the two southwestern counties of Ontario, is rare at London, and has only twice been taken at Toronto (J. H. Fleming).—G. EIFRIG, *Ottawa, Ont.*

The Prairie Warbler (*Dendroica discolor*) in Northern Ontario.—On

May 11 of this year, the writer, while paddling along the shore of Lake Doré, near Eganville, Renfrew County, Ontario, noticed in the alder bushes, which then showed no sign of leafing out, a warbler that seemed somewhat out of place there. On taking it, it proved to be a female *D. discolor*, with which I am very familiar from Maryland. This is quite an extension of the hitherto known range of this southern warbler. In the 'Catalogue of Canadian Birds' by Macoun, there are only two records given for Canada as a whole, both from Toronto, Ontario, both of May 11, 1900. Beside this, it has once been taken at Mt. Forest, Wellington County, Ontario. The capture of this more southerly species at this place and date was all the more remarkable, since the weather had so far been highly unfavorable to migration, especially warbler migration. It had been cold nearly every day in May. Of warblers I saw during the whole day only one Myrtle (*Dendroica coronata*) and one Black and White Warbler (*Mniotilta varia*). The specimen is now in my collection.—G. EIFRIG, Ottawa, Ont.

Breeding of the Mockingbird near Boston.—A pair of Mockingbirds (*Mimus polyglottos*) nested near my house in the West Roxbury district of Boston this year (1909) and successfully raised a brood of four young, which when I last saw them were fully fledged and taking full care of themselves. One of the birds made its appearance near my house Nov. 22, 1908, and it (presumably the same one) was seen occasionally all through the winter. Up to April 2, 1909, only one bird was seen, and that one had advertised itself as a male by beginning to sing on March 21. On April 2 or earlier it was joined by a female, and from that time on the pair were often seen together, and the male sang assiduously. The nest, which when first discovered, May 20, contained four eggs, was placed about fifteen feet from the ground near the top of a Japanese conifer within about a hundred feet of my house. The young left the nest June 12, and I caught and banded two of them with the aluminum bands furnished by Dr. Leon J. Cole of the Peabody Museum, New Haven. The numbers of the bands are 1453 and 1460. I sincerely hope that neither of these birds will be shot by any ornithologist for the purpose of ascertaining the number on the band, and if any banded Mockingbird is seen in Massachusetts this fall or next year, I shall be grateful if the observer will communicate the fact to me (as well as to Dr. Cole) and will spare the bird's life.

I have been unable to find any more recent Massachusetts breeding-records for this species than those cited by Messrs. Howe and Allen in 'The Birds of Massachusetts' (1901), though Dr. A. L. Reagh tells me that he is credibly informed that a pair of Mockingbirds built a nest and laid eggs in Roslindale, Boston, in 1902, the male being probably the bird observed by me near there March 23 of that year and reported in 'The Auk' (XIX, July, 1902, p. 292), but that the nest was broken up. The records include two sets of eggs taken, one in Springfield by Dr. J. A. Allen

and one in Groton by Mr. C. F. Batchelder. The only cases where young birds have been found with their parents in Massachusetts, thus giving satisfactory evidence of a successful nesting within the State, are of two nearly full-grown young taken by Mr. W. S. Townsend at Arlington, Aug. 15, 1883 (C. W. Townsend, Auk, I, April, 1884, p. 192), and of one young female with speckled under parts shot by Mr. H. A. Torrey at Marshfield, Aug. 15, 1889 (O. and O., XIV, Sept., 1889, p. 144). The present instance seems to be the first to be recorded where the entire nesting has been under observation in Massachusetts.— FRANCIS H. ALLEN, *West Roxbury, Mass.*

The Carolina Wren in Washtenaw County, Michigan.—The Carolina Wren (*Thryothorus ludovicianus*) has not been recorded from Washtenaw County since May 18, 1891, when a female was taken at Ann Arbor. But on June 6, 1909, the writer was fortunate enough to discover a male in full song in a bit of swampy woodland to the south of Ann Arbor. The clear, penetrating notes of the wren's fine song first drew my attention but the wren was not located until some time later when he was found on the lowest limb of a small sapling, preening his feathers. He was remarkably free from timidity and permitted of considerable familiarity. On June 13, this same locality was again visited but without results as far as the Carolina Wren was concerned. However, on June 20 the nest with five well developed young and one runt egg was discovered by following up the old bird. She was, by the merest chance, noted gathering moths and other insects from the decaying logs that lay about on the ground and by patient watching was seen to approach a small stump and disappear underneath it. Soon she returned with a bit of the excrement of the young in her bill. This she dropped at a short distance from the nest and resumed the hunt for more bugs, etc. Investigation showed the nest—a rough structure of moss, leaves, etc., lined with dried grasses, horse-hair and a few feathers—underneath a bit of decayed wood among the roots of the stump. Only one bird, presumably the female, was present in the vicinity of the nest-site, and she was far from showing any anxiety at my presence so near her home. On June 30 I revisited the nest in company with Mr. N. A. Wood of the University Museum and Mr. F. Novy. At that time the nest was deserted and the young flown. Mr. Wood collected the nest and runt egg for the Museum. One thing in particular regarding the find struck me as rather interesting and that was the fact that after the date of first discovery of the presence of the wrens not a snatch of song was heard on any of the subsequent visits.— A. D. TINKER, *Ann Arbor, Michigan.*

Brown Creepers Nesting near St. Louis.—About twenty miles northwest of St. Louis, in the bottom-land of the Missouri River, there is a swampy formation called Duck Pond. It consists of a horse-shoe-shaped body of more or less stagnant water extending for perhaps a mile and a quarter.

The water is studded with trees that have been dead long enough to lose their branches and part of their bark. Bushes and cat-tail flags border the inside of the horseshoe, while beyond the dead trees is a fringe of mixed growth of willows, ash and elm. The adjoining fields are not at present in cultivation. While wading through this swamp on the 6th of June, 1909, I observed two Brown Creepers (*Certhia familiaris americana*) making trips to one of the dead elms with something in their beaks. As they were not very timid, the spot they were visiting was easily located. A strip of bark about eight inches wide had drawn away from the tree and a nest was placed behind this and about twelve feet from the water. It did not contain young, as I expected, but the surface was covered with small pieces of bark, evidently the objects that the birds were carrying. I left the nest undisturbed and returned the following week. During an hour's wait no creepers visited the tree, though I thought I heard one's note. The nest was still empty, possibly deserted, and, as it was very doubtful whether I would have another opportunity to visit the nest, I collected it. The nest was placed between the bark and the trunk, filling the crescent-shaped opening. Some coarse material, sticks and pieces of bark, formed a framework for the support of the nest proper which was composed almost entirely of downy material, packed rather closely. The downy material appeared to be a mixture of fine shreds of bark and a cotton-like substance. The width of the nest was four and a half inches at the top and the depth was about three and a half. Mr. Widmann, after examining the nest, felt sure that it was of last year's make. Its condition indicated that young birds had been raised in it at some time. Perhaps the pieces of bark that were being added were in the nature of repairs. On the 20th of June the tree was again visited for a short time but no creepers were heard. On the 27th of June, I entered the swamp at a point about a half mile from the 'Creeper tree' and was fortunate enough to find a pair of Creepers feeding in the live growth of willows and ash. They did not act as though feeding young, the only thing in any way peculiar in their actions being the fact that one bird, on two occasions, flattened itself out on a horizontal limb, with wings and tail extended, and remained in that position for several seconds. Other birds frequenting the swamp were Flickers, Hairy, Red-headed, and Red-bellied Woodpeckers, Yellow-billed Cuckoos, White-eyed Vireos, Yellow-breasted Chats, Redstarts, Yellow-throats, Prothonotary Warblers, Crested Flycatchers, Bronzed Grackles, Redwing Blackbirds, Green Herons, Chickadees, and Titmice. One Black-billed Cuckoo and a Song Sparrow were also seen, both rather rare breeders in this part of Missouri.—NORMAN DEW. BETTS, *Pittsburgh, Pa.*

▲ Colony of Hermit Thrushes at Yaphank, Long Island, N. Y.—On the afternoon of the 25th of July, 1908, I heard an unfamiliar bird song in the woods at the easterly end of the village of Yaphank, not far from the middle of Long Island. Upon investigation I found several of the

birds, but as they sang from the tops of the pines or other trees, it was difficult for me to secure a good view with my glass. Early the next morning I was more fortunate, and secured a much better view of a rather tame bird, and was convinced that I had to do with Hermit Thrushes (*Hylocichla guttata pallasi*) resident on Long Island in mid-summer. This idea, however, was not strengthened by an examination of the literature, and it seemed from the records quite improbable that a colony of Hermit Thrushes should reside so far south as Yaphank, Long Island, and only 40 feet above the level of the sea.

Later I read with interest the article by Mr. Francis Harper in 'The Auk' for October, 1908, wherein he records a Hermit Thrush singing in the woods between Holbrook and Patchogue, Long Island. He also mentions the two previous Long Island records for immature birds and quotes from Dr. Braislin that, "Further investigation will probably show that the Hermit Thrush is, though rare, a regular summer resident on Long Island."

From observations made during July, 1909, I may state that the Hermit Thrush is one of the most common birds at Yaphank, and that I have heard as many as four singing at one time. On one occasion on the 31st of the month, one sang for over an hour with only momentary intermissions caused by its changing its position among the trees, or by my approaching too near. It, however, was a tame bird, and very accommodating. I found that the thrushes were not only abundant in the pitch pine and oak woods at the easterly end of the village, but that they were to be met with in the woods several miles to the north, in the vicinity of Longwood manor house. This district appears then to be the chief summer home of the Hermit Thrush on Long Island, and the ornithologist may with certainty expect to hear this fine songster if he but repair to Yaphank at the proper season.—WM. T. DAVIS, *New Brighton, Staten Island, N. Y.*

North Carolina Notes.—DOVEKIE (*Alle alle*). This bird appeared in numbers on the North Carolina coast last winter. In January, 1909, reports came in of a small black and white "duck, with a bill like a chicken," hitherto unknown, these reports covering the coast line from Roanoke Island to Beaufort. A man living on the point of Cape Lookout told me that he had seen not less than fifteen or twenty dead ones washed up along shore, and that flocks of them "used" in Lookout Cove during the winter. The game warden at Cape Hatteras said that they were on Pamlico Sound in flocks of hundreds. Flocks were also reported from Core Sound. Several were taken at Beaufort and forwarded to northern ornithologists. The Museum received three specimens in the flesh, all from Beaufort, and two skins from the coast a little south of Roanoke Island. From what I can learn there was a flight of Dovekies on this coast about twenty years ago, with only a very few stragglers recorded since. All those found dead were reported as much emaciated, as was certainly the case with the three received by me.

SOOTY TERN (*Sterna fuscata*). A specimen — adult male — was caught alive within a few miles of Raleigh on June 30 of this year. It did not attempt to fly when pursued and was easily captured by hand. I received it in the flesh the next day, it having died during the night. The body was much emaciated, but showed no signs of injury.

RED PHALAROPE (*Phalaropus fulicarius*). On February 23, 1909, the State Museum at Raleigh received a specimen in the flesh from M. Leslie Davis, of Beaufort, N. C. This specimen was picked up on the beach near Beaufort the previous day. I often hear of small "web-footed" birds being observed in some numbers along our coast after a heavy storm and imagine that phalaropes are not uncommon under such conditions.— H. H. BRIMLEY, *Curator, State Museum, Raleigh, N. C.*

Notes from Crawford Notch, N. H.— At the summit of the Crawford Notch, New Hampshire, some two thousand feet above sea level and in the heart of the White Mountain region, is a small clearing surrounded on all sides by forest. Among many species to be expected here I have found the following which seem worth noting and which were not included in my list of Crawford birds.¹

1. **Larus argentatus**. **HERRING GULL**.— On September 25, 1907, three of these birds visited the Notch. Two of them remained in the air while the third alighted for a few moments on Saco Lake, a tiny sheet of water. Another example occurred on September 25, 1908. It remained the greater part of the forenoon.

2. **Calidris arenaria**. **SANDERLING**. A single bird passed the afternoon of August 18, 1909, on the shore of Saco Lake. The bird, which arrived during a rain storm, was very tame.

3. **Ægialitis semipalmata**. **SEMIPALMATED PLOVER**.— On September 3, 1908, during a northeast rain storm a single bird in company with a Semipalmated Sandpiper remained for a few moments on a sand bar in Saco Lake. The bird was easily approached.

4. **Passer domesticus**. **ENGLISH SPARROW**.— Up to the season of 1909 I had noted only one individual of this species — in August, 1905.² In 1909, however, several birds occurred and at least one pair nested.

5. **Oporornis agilis**. **CONNECTICUT WARBLER**.— Late in the afternoon of September 27, 1907, a mild, cloudy day, one of these birds flew against a window of the hotel and was killed. It was preserved and is in my possession.— RICHARD MERRILL MARBLE, *Brookline, Mass.*

Additions to the List of Birds of Allegany and Garrett Counties, Western Maryland.— Since publishing the above-named list (Auk, Vol. XXI) I

¹ A List of Birds found within a radius of one mile from the Crawford House, N. H., September 20, 1907.

[See below, p. 446, for further mention of this paper.—EDD.]

² List, page 6.

have kept in touch with the bird-lore of the region referred to and now would add three more species to those enumerated in that list.

Strix pratincola. BARN OWL. In August, 1906, while on a visit to Cumberland, Maryland, I saw a captive specimen of this species, which had been taken at Corriganville, a hamlet nearby.

Passerculus s. savanna. SAVANNAH SPARROW.—I saw an individual of this species August, 1906, at Mt. Lake Park, Allegany County, the noted summer resort on the Baltimore and Ohio Railway. It must have been an oversight of mine not to find it there and at Cumberland earlier.

Minus polyglottos. MOCKINGBIRD.—During my residence in the region covered by the list, I kept my eyes open for this species, being told that they were sometimes seen, but I failed to find any. Now Mr. John Fulton, a well-known nature lover of Cumberland, writes me, that a Mr. LeFevre found three pairs near Oldtown, Allegany County, on May 5, and subsequently the nest of one of these containing four young. Unfortunately this nest was shortly after robbed of its contents by prowling boys from South Cumberland. It is to be hoped that the other pairs brought out their young safely, so that this fine bird may become firmly established at Cumberland, where, no doubt, it ought to be.—G. EIFRIG, *Ottawa, Ont.*

The Food of Several Maine Water-Birds.—The following notes are the result of a number of actual observations on the food of birds; that for the greater part have been examined under conditions which did not admit of the preservation of the stomach contents for expert examination. Therefore they are here offered as a contribution to a subject both important and interesting.

In the diet of the Herring Gull (*Larus argentatus*) I have noticed sea cucumbers (*Pentacta frondosa*) disgorged by the side of a nest, and during the winter of 1907-08, one of these birds was seen repeatedly dropping a frozen *Pentacta* on Old Orchard beach. Previous to freezing a hole had been torn in its side, evidently by the beak of a gull or crow.

The shell bodies of the beach snail (*Polinices heros*), with operculum attached, have been found by the sides of nests. The broken and empty shells are common at resting places of this gull. This mollusk is a well known and abundant enemy of the common clam (*Mya arenaria*). On the Maine coast it is eaten by modern man to a very limited extent, and in certain sections, and at certain times it is used to a great extent for fish bait. Yet its destruction of the clam, so extensively used in commerce, offsets its own small use, and the habit of the Gull in feeding upon it is an economic service, to be considered in the summary of its feeding habits. At the No-mans-land colony, in summer, I once saw nearly a pint of cockles (*Purpura lapillus*) disgorged by the side of a nest; and at the Brothers, Englishman's Bay, a half pint of the crustacean, *Thysanopoda norvegica*, disgorged by the side of a nest.

Larus philadelphia, besides its diet of fish, and garbage, has been found

feeding over rafts of drifting sea weeds, when its diet was found to consist of maggots, probably *Coleopa frigida*, a fly that breeds at high water mark in decaying seaweeds (*Algæ* and *Zostera*).

Once at Matinicus Rock in the month of August, a school of skeleton shrimps (*Thysanopoda norvegica*) was stranded near the boat house, at high water, and were left in a windrow to perish, by the receding tide. The Arctic Terns were quick to detect their presence, and became engaged in carrying large numbers from the beach to their young, until darkness caused them to stop.

Winter Black Ducks (*Anas rubripes*) taken on the outer islands off the coast in winter have been found to be chiefly fed upon *Littorina palliata*. A specimen taken on the Presumpscot River, in Windham, late in November, was gorged with a fresh water snail (*Campeloma decisa*). Two specimens taken on tide water at the mouth of the same river, in the fall, had their gullets filled with seed of eel grass (*Zostera marina*) and a few isopods (*Idotea marina*).

The importance of *Zostera* as a food for winter birds seems to be considerable. Black Ducks, Whistlers and probably other ducks feed upon its seeds in our caves and bays. Horned Larks, Snow Buntings and other finches feed upon them on our beaches in winter. Geese and Brant devour its rhizomes. Its seeds are of a good size, and the crop extensive. Its value must be enormous though not appreciated.

Wood Ducks coming under my observation have shown a fondness for bulbs of *Sagittaria*.

A Scaup (*Marila marila*) from the Fox Islands in winter was well filled with shells of *Macoma balthica*.

In the stomach of Whistlers (*Clangula clangula americana*) seed of *Zostera* and shells of *Lacuna vineta* and *Margarita helicina*, both associates on the eelgrass, have been identified.

A King Eider, shot at Scarborough, during the winter of 1907-08, had its gullet filled with large specimens of *Crammarus locusta*, the common sea flea of our shores. Another taken in 1908 was similarly filled with young crabs (*Cancer irroratus*), in both instances to the exclusion of other food.

In the stomachs of Canada Geese, and Brant (*Branta bernicla glauco-gastra*) I have found rhizomes of *Zostera*, and in the Canada Goose, sea lettuce (*Ulva lactuca*).

In the stomach of the Common Bittern, besides frogs, I have seen the field mouse (*Microtus pennsylvanicus*) and the large Water Beetle (*Distycus*).

In the stomach of a Dowitcher (*Macrohamphus griseus*), maggots, probably *Coleopa frigida*, a beach fly which abounds on our coast, breeding in decaying sea weeds at or above high tide mark.

Arquatella maritima is abundant on the outermost ledges and islands east of Cape Small. I have found its diet to consist commonly of small

blue mussels (*Mytilus edulis*) and barnacles (*Balanus balanoides*), the same diet, and same resort, as that of the Turnstone (*Arenaria interpres morinella*).—ARTHUR H. NORTON, *Portland, Maine*.

Hybridism and Generic Characters in the Trochilidæ.—I am tempted to offer a few comments on Mr. Walter P. Taylor's interesting article in the July 'Auk,' not merely because the subject is one to which at the present time I am giving special attention, but because I believe there is much to be said against Mr. Taylor's view of the case. Before discussing the question of generic differences, however, I wish to correct an error (for which I seem to be responsible) concerning the type-locality of *Selasphorus floresii*. This is given as "Bolaños, State of Oaxaca," whereas it should read Bolaños, State of Jalisco; therefore, the supposed fifth specimen mentioned in the second paragraph on page 292 is the same example as that on which the supposed species was based. There is not the slightest doubt in my mind that this bird is a hybrid of *Selasphorus rufus* or *S. alleni* and *Calypte anna*, and it is not improbable that all four of the known specimens are of California origin, for I have an indistinct recollection of having somewhere read that some of Flores's specimens were obtained in California and subsequently, through error, labeled Bolaños.¹

Concerning generic distinctions it will simplify the matter very much to state that the question hinges entirely on what constitutes a genus in birds, and especially in the Trochilidæ. The generally accepted definition of a genus in zoölogy and botany is a group of species which agree in the possession of certain characters not possessed by any other species or group of species. In the various definitions of a genus which I have consulted in connection with this article,² it is nowhere implied that the differences must be exclusively morphological; the implication being that it is only necessary that a given group or set of species should share in certain obvious characteristics which separate them from any allied group. Every one knows that taxonomic groups, whether generic or of higher rank, are by no means of equal value in all classes of vertebrates (see footnote on page 6, 'Birds of North and Middle America,' Part I), and that birds, as a Class, are so very much more uniform in structure, and at the same time so much more numerous in species than the members of any other Class that, necessarily, a more minute subdivision is required, or, in other words, orders, families, genera, etc. (all super-specific groups), while arbitrarily equal in taxonomic rank are by no means (and cannot be) based on characters of equal anatomical importance. It is unfortunate that this fact is sometimes lost sight of, and that some would require for an avian genus

¹ If I am not mistaken in this impression, a similar case is that of several specimens in the National Museum collection received from Mr. John Xantus and labeled by him "Plains of Colima" which were undoubtedly obtained in California.

² See Agassiz, Essay on Classification, § 5, Standard Dictionary, Century Dictionary, etc.

more or less fundamental differences of structure. Moreover, the Trochilidæ bear to other birds much the same relation in this respect that birds in general bear to other classes of vertebrates, for no other family of birds is at the same time so numerous in species and so varied in the details of external structure; yet, notwithstanding the extraordinary range of variation among the more than five hundred species composing the family, so uniform in fundamental structural characters that no one has yet been able to satisfactorily divide it into groups of supergeneric rank. Usually there is little difficulty in segregating the Trochilidæ into generic groups, complying in all respects with the requirements of a genus according to the generally accepted definition; and certainly *Trochilus*, *Calypte*, and *Selasphorus* are groups which can be defined, this being really the best test. *Trochilus* and *Calypte* both differ from *Selasphorus* in the forked instead of rounded or graduated tail, and in entire absence of rufous from the plumage, all the species of *Selasphorus* presenting, in both sexes, more or less of rufous in the plumage and the tail of reverse form from that of *Trochilus* and *Calypte*; while the two last named differ from one another in the exclusive possession by *Trochilus* of abruptly reduced inner (proximal) primaries, with a subterminal angular projection to the inner web, while the adult males have the pileum concolor with the back, the lateral feather of the "gorget" short, and the lateral rectrices pointed; those of *Calypte* having the pileum brilliantly metallic reddish purple or violet (like the "gorget"), the lateral feather of the gorget elongated, and the lateral rectrices rounded terminally and otherwise different in form. The very natural and well-circumscribed group of nine species constituting the genus *Selasphorus* contains no two species more closely allied than *S. rufus* and *S. allenii*, except two of the Costa Rican forms; hence, while everyone (including myself) will agree that it would "be as reasonable to put *S. allenii* in one genus and *S. rufus* in another, as to split up *Trochilus* [i. e., the supergeneric group comprising *Trochilus*, *Calypte*, and *Selasphorus*] on the basis of characters of no more weight than those separating these two species,"¹ I do not believe that anyone can be found who will claim that *S. allenii* and *S. rufus* are as distinct from one another as either of them is from species of *Trochilus* or *Calypte*.

What is known concerning hybrids among birds, instead of supporting Mr. Taylor's view that *Trochilus*, *Calypte*, and *Selasphorus* are not good genera indicates, if anything, exactly the contrary. In the first place, it may be fairly questioned whether hybrids are relatively more frequent among the Trochilidæ than in other families. Again, hybrids between congeneric species are, so far as I am aware, invariably fertile (e. g., *Helminthophila pinus* + *H. chrysoptera*, *Colaptes auratus* + *C. cafer*, *Anas platyrhynchos* + *A. rubripes*, etc.²) while those between distinct genera are

¹ Italics mine.—R. R.

² The list might be considerably extended, but this would open the way for a controversy concerning specific characters!

not; consequently hybrids between distinct genera (even when as closely allied as *Trochilus*, *Calypte*, and *Selasphorus*) must necessarily be rare and sporadic.

Mr. Taylor's concluding observation that "Trochiline hybrids occur only between species whose ranges overlap or adjoin" necessarily applies with equal force to *all* hybrids, and therefore has no bearing on the case.—

ROBERT RIDGWAY, *U. S. National Museum, Washington, D. C.*

RECENT LITERATURE.

Cory's 'The Birds of Illinois and Wisconsin.'¹—In a portly volume of 764 pages the Curator of Zoölogy of the Field Museum has given us an illustrated manual of the Birds of Illinois and Wisconsin which for effectiveness of treatment will doubtless long remain without a rival. As stated by the author: "The present work includes, as far as known, all species and subspecies of birds which occur in Illinois and Wisconsin, the total number being 398, with descriptions of their various plumages, nests and eggs, and geographical distribution, together with more or less brief biographical notes concerning them." It is further said: "The keys to families and species are practically the same as those which first appeared in the author's *Birds of Eastern North America*, revised to meet present needs"; which means the omission of all species and higher groups not found in the area under consideration, and such other modifications as have been found necessary.

The preface is a brief statement of the scope of the work, an explanation of how to use the keys, and acknowledgments of indebtedness to the works of previous authors. Then follows the table of contents, a glossary of terms used in description (illustrated), an Introduction (pp. 13-22), describing and profusely illustrating types of structure of the wing, tail, leg and foot, and bill, and 'how to measure a bird.' Keys to the families and species occupy pages 23-274, and the systematic treatment of the species comprises pages 275-715. The work concludes with 'A Key to the Eggs of the more common birds known to breed in Northern Illinois and Southern Wisconsin' (pp. 716-739, with two half-tone plates of eggs), a Bibliography (pp. 740-750), and an Index.

In 1899, just ten years ago, appeared Mr. Cory's '*Key to the Birds of Eastern North America*,' published, like the present volume, by the Field Museum. These Keys, as already stated, constitute the basis of the elabo-

¹ *The Birds of Illinois and Wisconsin.* By Charles B. Cory, Curator of Department of Zoölogy, Field Museum of Natural History. Publication 131. Zoölogical Series, Vol. IX. Chicago, U. S. A., 1909. Svo, pp. 1-764, numerous text figures

rate key portion of the present volume, and as they have already been noticed in detail in 'The Auk'¹ it is unnecessary to comment upon them at length in the present connection. A few lines from them, however, may be here transcribed in illustration of the general character of the work here under notice: "In the present case we have a work that is not only elaborate in its pictorial details, simple in method of treatment, and comprehensive in scope, but also systematic and scientific in arrangement.... The text is brief, the cuts occupying the greater part.... Besides the numerous cuts of structural parts, as bill, feet, tail, etc., each species is figured, either full length or half length, to show the most characteristic parts.... [The text] is limited to brief diagnoses, in which the distinctive features are emphasized by the use of special [heavy-face] type.... The author in his 'Key' to North American birds has certainly reduced the difficulty of identifying our birds to a minimum, and anyone so unfortunate as not to be able to identify his specimens in any stage of plumage, by Mr. Cory's 'Keys' may well give up the attempt in despair."

The nomenclature is strictly that of the A. O. U. Check-List, down to and including the Fourteenth Supplement (July, 1908), with a few rectifications in an insert facing the title-page, based on the Fifteenth Supplement (July, 1909). Each species is concisely characterized, including the immature and seasonal variations of plumage, and its general distribution is briefly stated, following which is its status as a bird of Illinois and Wisconsin, with, in the case of rare species, the citation of authorities for its occurrence. This part of the work appears to have been very carefully compiled, and rests on the solid foundation furnished by the various recent works on the birds of special localities within the general area here covered.

In general the work is exceedingly free from typographical errors, and in other respects is typographically excellent. We are hence the more surprised to meet (on p. 15) 'rectices' in place of rectrices, especially since attention was called to this error when it originally appeared in 1899, and it was corrected in a subsequent reprint of the original work.

In conciseness of statement, in fullness of detail, in profuseness of illustration, and in efficiency and utility as a local bird manual, Mr. Cory's 'Birds of Illinois and Wisconsin' is entitled to the highest praise, and we congratulate the author and the Field Museum on the addition of this valuable contribution to ornithological literature.—J. A. A.

Wrights' 'Birds of the Boston Public Garden.'²—In this little book of some 250 pages the author offers the results of his nine seasons' work (1900–1908) as an earnest, persistent and careful observer of the birds of a

¹ Vol. XVI, Oct., 1899, pp. 366, 367 (Water Birds); Vol. XVII, Jan., 1900, p. 78 (Land Birds).

² Birds of the | Boston Public Garden | A Study in Migration | By | Horace Winslow Wright | With an Introduction by | Bradford Torrey | and | Illustrations | [vignette] Boston and New York | Houghton Mifflin Company | The Riverside Press 1909 — 12mo, pp. xx + 238, and 8 photographic illustrations. \$1.00 net.

public garden in a large city. Following a short preface and an appropriate introductory note by Bradford Torrey, well-known to readers of 'The Auk,' are some fifty pages devoted to an interesting summary, in turn followed by an 'Annotated List of the Birds of the Boston Public Garden and incidentally of the Common in Migration, 1900-1908,' numbering 116 species and occupying about 150 pages. Few observers are so circumstanced, even if they possess the inclination, as to be able to devote regularly many hours each day during the spring months for so long a period to the study of the bird life of a city park, and Mr. Wright has done well to share the results of his pastime with other ornithologists and bird lovers. In autumn the garden was again regularly visited from the middle of October to the end of November, and also at intervals during the winter.

Following a description of the situation, area, and general character of the Garden, and his methods of investigation, certain generalizations are given, from which it appears that "in the case of twenty common resident species, selected for comparison, the first individuals in the series of years have arrived in the Garden from three to eight days later than in the surrounding country and that the range of first arrival of each of these species in the nine years has been from three to nineteen days later. . . . The testimony of the Garden seems, therefore, to substantiate very strongly Mr. Brewster's belief that in general the earliest arriving birds are summer residents and that the later arriving birds are migrants bound farther north." Mr. Wright has noted many interesting facts of general interest regarding the manner of migration, the influence of weather conditions upon the length of time migrating birds remain in the Garden, and how different sets of individual birds replace each other during the season of migration. Of special interest also are his daily censuses of birds seen, many of which are given, which include not only the species seen on a given day but the number of individuals of each. Thus on a rainy day in May (May 19, 1900) thirty species were recorded, of which thirteen species were warblers, represented by thirty-three individuals out of a total of fifty-six recorded. On May 16, 1905, thirty-eight species were observed, represented by ninety individuals of which thirty-seven were warblers, representing eighteen species. On May 19, 1907, even this large record was exceeded, but the maximum was on May 12, 1908, when one hundred and thirty-seven birds were noted. In each case, in these censuses, the author gives a list of the species seen and the number of individuals of each. The dates are also given of the larger migration-flights for the whole period of observation. The length of stay of individual birds is noted in a number of instances.

The annotated list is a systematic report on the author's observations of each of the 116 species recorded, year by year, for the whole period of observation, with detailed records of the visitations of the rarer species, and the earliest and latest records for the more common kinds, with such additional comment as may be required to set forth fully the manner of occurrence. In short, the author has set a standard which other observers may well follow with profit.—J. A. A.

Hersey and Rockwell on the Birds of the Barr Lake District, Colorado.¹—The Barr Lake District, Adams County, Colorado, as here defined is “a circular area fifteen miles in diameter, with the station of Barr as a center.” The area is thus practically the same as that treated by A. H. Felger in a previous number of this journal (*antea*, pp. 272–291, with maps, which see), but while Felger’s paper includes only the water birds, the present article gives a list of all of the birds (205 species) positively identified as occurring there, and omits “a number of species that without reasonable doubt occur there, because of lack of absolute identification.” Felger included many of the species (distinguished by enclosure in brackets) likely to occur, with records of their capture at nearby localities. The present list contains a number of species of water birds not given by Felger as actually taken in the Barr Lake district, their known occurrence resting, in some cases, apparently on the hitherto unpublished records of Mr. Hersey, and in other cases the species are given merely as rare migrants, without further comment. All but one are included in the bracketed portions of the Felger list. The two lists taken together, so far as the aquatic birds are concerned, seem to give the fullest information possible for the Barr Lake district to date. The two papers are exactly synchronous, the “advance print” of the Hersey-Rockwell paper bearing the date on which the July issue of this journal was mailed.

The list of the Barr Lake district land birds numbers about 130 species, and is the first full list of these birds thus far published for this limited area. Half-tone figures in the text, from photographs by the authors, illustrate the nests and eggs of six species of Barr Lake breeding birds. In the present paper dates of occurrence are rarely given, nor are there many references to previous records, but “a table of dates of migration” for the Barr Lake district is promised as a supplemental publication to the present ‘List.’ — J. A. A.

McGregor on Birds from Northern Mindanao.² — This is a report on a collection made by Mr. Andres Celestino in northern Mindanao during the months of October, November and December, 1907, and numbers 106 species, briefly annotated. Six of them are here recorded for the first time from Mindanao, and the capture of another confirms a previous doubtful record of its occurrence in the island.— J. A. A.

McGregor on Philippine Ornithological Literature.³ — This instalment

¹ An Annotated List of the Birds of the Barr Lake District, Adams County, Colorado. By L. J. Hersey and Robert B. Rockwell. Proceedings of the Colorado Biological Society, Vol. I, No. 3, June 28, 1909. “Advance Print, from The Condor, Vol. XI, No. 4 [pp. 109–122]. Issued June 28, 1909.”

² A Collection of Birds from Northern Mindanao. By Richard C. McGregor. The Philippine Journal of Science, Vol. IV, No. 1, 1909, pp. 67–77.

³ Philippine Ornithological Literature, II. By Richard C. McGregor. The Philippine Journal of Science, Vol. IV, No. 1, 1909, pp. 79–86.

consists of 35 titles of papers by the late Marquis of Tweeddale, all but one published during the years 1867-1881, with 15 additional titles of papers by other authors. The annotations show very fully the bearing of the papers cited upon Philippine ornithology.—J. A. A.

Marble on Birds of New Hampshire.¹—This is a privately printed list of 92 species, given under vernacular names. It contains many records of interest and forms an apparently trustworthy summary of the birds occurring at Crawford's during the breeding season. As the title indicates, it is based on five years' observations.—J. A. A.

Reed's 'Bird Guide.'²—In this attractive little work each species is illustrated in color, the figure and the text occupying a single page. The text is biographical, describing the range of the species, its notes, and nesting habits. The colored figures, with the 'Field Key' at the end of the book, afford the means of identification. The illustrations (wash drawings, colored) are surprisingly adequate considering their cost, and will greatly aid amateurs in recognizing the birds they meet with in life. As a 'Bird Guide' it is truly *multum in parvo*.—J. A. A.

Cherrie on New Birds from the Orinoco Region and Trinidad.³—The new species and subspecies are, (1) *Formicivora canofumosus*, from the Orinoco; (2) *Planesticus fumigatus aquilonalis*, from Trinidad; (3) *Pachyrhamphus marcidus*, from the Orinoco; (4) *Anoplops rufigula*, from the Caura River, Venezuela. A new genus is *Inezia*; type, *Capsiempis caudata* Salvin.—J. A. A.

Miller's Experiment in the Colonization of the House Martin.⁴—The experiment consisted in taking on July 14, 1908, five young birds from Portland to Shawnee, nine miles distant on the Delaware River in Pennsylvania. The birds, just able to fly, were successfully reared by hand. One of the birds, escaping on the fourth day after they were transferred to their new home, flew away and did not return to the home but was repeatedly seen in the neighborhood associating with Barn Swallows.

¹ A | List of Birds | Found within a radius of one mile from | the Crawford House, N. H., | in July, August and September, | during the past five years. | By | Richard Merrill Marble. | September, 1907.—Privately printed, 8vo, pp. 8.

² Bird Guide. Part 2. Land Birds east of the Rockies, from Parrots to Bluebirds. By Chester A. Reed. Charles K. Reed, Worcester, Mass., 1909. 3½ by 5½ inches, pp. 1-223 + index. Cloth, 75 cents; in flexible leather, \$1.00.

³ New Birds from the Orinoco Region and from Trinidad. By Geo. K. Cherrie. Science Bulletin, Brooklyn Institute of Arts and Sciences, Vol. I, No. 16, pp. 387-390. Issued June 30, 1909.

⁴ An Experiment in the Colonization of the House Martin. By Charles W. Miller, Worthington Society for the Study of Bird Life, Bulletin No. 1, Jan., 1909. 8vo, pp. 12, and 4 half-tone plates.

At the end of eight days the remaining four were allowed to fly in an enclosure; they became very tame and fed from the hand. After five days two more were allowed their freedom. They remained in the vicinity for nineteen days, when they left, "probably to join some roost." They were seen ten days later (August 24), and then disappeared, presumably migrating. Of the two still retained in confinement, one died October 21, of a tumour; the other was then in good health with a prospect of surviving the winter. It thus appears that young martins can be taken from their homes to other localities and reared by hand; but whether the survivors will return to their foster home the following year, Mr. Miller's experiment leaves us in doubt. The results of further experiments in this line may well be awaited with interest.—J. A. A.

Wolcott's Analysis of the Bird Fauna of Nebraska.¹—The number of species and subspecies known to have occurred within the State of Nebraska is here given as 406. This large number results from the geographical position of the State, which lies "between the humid eastern faunal areas and the arid areas of the West," and thus contains forms characteristic of both these climatic areas. In consequence of these conditions, the eastern and western subspecies of the same species meet and merge, through "a gradual shading of the one into the other. Intermediate specimens occur representing all shades of gradation between them. It may be that only a few of the specimens taken at the eastern end of the State represent the one, while only at the extreme west are found specimens typical of the other."

The species are divided into categories in accordance with the manner of their occurrence within the State, as follows: "I. Species found in some part of the State, in larger or smaller numbers, at all seasons of the year," or are, in other words, permanent residents. These number 72, and nearly all are designated as having been found breeding in the State. "II. Species migrant in spring and fall and which remain in larger or smaller numbers to breed in the State; and also summer visitors which are stragglers and do not breed here." These number 174, and are also nearly all marked as known to breed in the State. "III. Species occurring in the State only in spring and fall migrations and breeding not probable. . . ." numbering 106 species. "IV. Winter visitors to the State"—46 species. "V. Species now extinct within the limits of Nebraska"—6 species. "VI. Introduced species"—2, the Ring-necked Pheasant and the English Sparrow.

A second analysis gives the ratio of representation, by species, of the orders and principal passerine families in Nebraska as compared with North America north of Mexico, on the basis of the A. O. U. Check-List, with interesting results, too detailed for mention in this connection.

¹ An Analysis of Nebraska's Bird Fauna. By Robert H. Wolcott. Proc. Nebraska Ornithologists' Union, Vol. IV, Part 2, pp. 25-55, with pll. i-vi. August 25, 1909.

A third analysis deals with the breeding species and subspecies (232 in number) of the State in reference to their centers of distribution, as to whether they are northward or southward, eastward or westward; from which it appears that "Nebraska lies, roughly speaking, at the center of distribution of 38 forms." Lists are also given of those breeding mainly to the northward, southward, eastward, or westward of the State.

The faunal areas of Nebraska, considered from the avian standpoint, are considered at length, five 'regions' being recognized, as follows: (1) the Missouri [River] Region; (2) the Prairie Region; (3) the Sandhill Region; (4) the Plains Region; (5) the Pine Ridge Region. These are each geographically defined and their leading characteristics stated, together with lists of the species of birds characteristic of each, followed by a tabular résumé and pertinent comment. A colored map illustrates these faunal regions, and various types of environment are shown in five half-tone plates.

Altogether, Professor Wolcott's 'Analysis' of the Nebraska bird fauna is well done, and a piece of work well worth doing.—J. A. A.

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CORRESPONDENCE.

New Edition of Ridgway's 'Nomenclature of Colors.'

TO THE EDITORS OF 'THE AUK':—

Dear Sirs.—Probably some of the readers of 'The Auk' are aware that I have been engaged, as opportunity allowed, on a new and greatly improved edition of my 'Nomenclature of Colors' (1886). I am happy to be able to announce that after twenty years of necessarily intermittent labor this most difficult and tedious task has at last been accomplished and arrangements made for its early publication, the plates being already in process of reproduction.

The new work will present nearly 1350 colors, arranged scientifically, and reproduced by a method which guarantees a faithful copy of the originals as to hue and tone, absolute uniformity throughout the entire edition, and at the same time as great a degree of permanency as is possible with pigments now known to colorists. The standards of the original work are of course retained, and as many additional colors are named as is practicable. Obviously it is impossible to provide names for all of so large a number of colors, but those which are left unnamed may be easily designated by an exceedingly simple system of symbols, as may also the intermediates, both as to hue and tone — rendering the work practically equivalent to the actual presentation of more than 5300 named or otherwise designable color-samples. In short, the work has been so carefully planned and executed that I have no doubt as to its adequacy to meet all the demands of naturalists and others who have use for a comprehensive color nomenclature and standards. The book will be the same size (except for slightly greater thickness, there being 64 plates instead of the 10 of the old edition) and will sell for about \$5.00 net, or only \$1.00 more than the original work.

Very truly yours,

ROBERT RIDGWAY.

Washington,
Sept. 9th, 1909.

Avian Osteology and Game Bird Protection.

EDITORS OF 'THE AUK':—

Dear Sirs:—When one has brought to his attention in a practical way, be it a law, a practice, or a method, anything that tends to give more effective protection to our different species of game birds, it must be believed that it requires no apology to the readers of 'The Auk' in general or to Bird Protection Organizations in particular, to invite their attention to the facts in these pages. Now almost any ornithologist would be kept a guessing as to how, in any possible manner, a knowledge of the osteology

of birds could, through the remotest sort of an operation, be employed as a means whereby the various methods in vogue to protect our game birds would, thanks to such a knowledge, have added to them another process, the application of which tends not only to aid in such protection, but at the same time place the offenders in a position where they may be readily apprehended and be made to suffer the penalties of the laws on the subject. During the times of publication of my various memoirs upon the osteology of game birds in general no such possible use of the facts and information therein set forth ever entered my mind for an instant, and, indeed, it was not until a few years ago when, through a practical demonstration of it, the value of the practice, here to be briefly described, became apparent to me. There is one point which will not be necessary to touch upon here, for every game bird protectionist is more or less familiar with the nature of the heavy fines the law imposes upon all hotel and restaurant keepers for serving to their patrons such birds out of season, or even having them at such times in their possession. In fact the law applies to any one so offending. Well and good, the law is one thing, while to detect, apprehend and punish such offenders is quite another thing, and usually a feat of unusual difficulty in its accomplishment. The Forest, Fish and Game Commission of New York had found it so for years. No method had ever occurred to them by means of which apprehension and punishment of the culprits could be made certain. The great hotels and wealthy restaurants smiled and all over the city violated the law every day with impunity, and numerous markets supplied the demand, and wild turkeys, grouse, quail, woodcock, snipe and the rest were being sold to them quite regardless of the law. Detectives, both men and women,—the best known in the State,—are employed with the view of detecting the law's violators. They resort to the aforesaid hotels and restaurants, even late at night in evening dress, and, out of season, order such birds to be served to them. The sometimes unsuspecting hosts and their waiters, after certain, what they considered to be, the necessary precautionary preliminaries, serve "the real thing." But these detectives are not ornithologists, much less avian ornithotomists, and therefore are subject to being only too often readily deceived, and thus get the Commission into trouble through making false charges. Later on it occurs to them, when not observed by the waiters at the tables they occupy, to slip the bones of the birds served to them into convenient pockets. At the offices of the Commission these bones are carefully preserved in separate boxes, with numbers and dates upon them, with other required data. Except sometimes in the case of woodcock, the heads and feet are never secured, while sterna, pelves, ribs and other bones are commonly so obtained. But what to do with this material, that's the question. Everything renders the solution pressing and therefore at last the suggestion materializes. Send for a 'bone-sharp.' The worthy President of the National Association of the Audubon Societies recommends one, and, without an idea of what is required of him this expert in due course finds himself alone with the

Game Protector, behind closed doors at the offices of the Commission. They are seated and facing each other. One of the aforesaid boxes, with a certain air of mystery, and perhaps grave doubts on the part of the Protector as to the result, is produced, and its contents spread out upon a sheet of paper before the expert. An examination something after the following order ensues:—

Protector:— Can you tell me what these are?

Expert:— Certainly, they are the bones of some bird or other.

Protector (evidently encouraged):— Yes? — and supposing they are, can you tell me, as to the *species* of bird they probably belonged to?

Expert:— Certainly, I can do better than that, for I can state positively that they belonged to some species, or subspecies perhaps, of an American quail of the genus *Colinus*.

Protector (showing marked astonishment):— Could you demonstrate that fact to a judge and jury and swear to it as a witness in a court?

Expert:— Yes, certainly, provided the State makes it worth my while.

Protector (producing another box):— What would you say of this bone?

Expert:— It is part of a sternum of a grouse,— probably a *Bonasa*; I could make absolutely certain by comparing it with material in my own possession.

Protector:— And this?

Expert:— Proximal half of a humerus of a domestic fowl,— chicken — let me see,— yes, the left one.

Protector:— There is a big case, and a big question to be decided here; can you make enlarged drawings of these bones? Are you a good demonstrator? Do you become “rattled” in court? Can you name the bones of *any* fowl, game or domestic one, as easily as you have these?

Expert:— Better try me! No, I’m not perturbed in court (!), and some of these bones I can correctly pass upon in the dark by digital examination alone.

Protector:— Thank you,— that will do. You will hear from me later.

Now when such testimony as this is brought before judge and jury in a court, backed by the material and the affidavits of the detectives or their testimony as witnesses, there can be but one decision,— a verdict for the State. And, when the fines may run all the way from \$500.00 to \$4500.00 it is certain of having its influence in the matter of the protection of our game birds. Such methods should be encouraged in every possible way, and pushed to the very limit of their usefulness. Woodcock especially stand in need of just such additional protection to prevent their utter extinction.

Very faithfully yours,

R. W. SHUFELDT.

Washington, D. C.

14th Aug., 1909.

NOTES AND NEWS.

WILLIAM H. BROWNSON, an Associate of the American Ornithologists' Union, died at his home in South Portland, Maine, September 6, 1909, after many weeks of illness, in the 55th year of his age, he having been born in Norridgewock, Maine, November 5, 1854. His father was the Rev. S. S. Brownson, a prominent Baptist clergyman, and a Scotchman by birth. Mr. Brownson, the subject of this sketch, was graduated from Colby University in 1877, and early directed his attention to journalism, and was for a long period connected with the Portland 'Advertiser,' holding the position of city editor for twenty-five years. He was also for many years a member of the school board of Portland, and in 1905 became superintendent of its schools, which position he held at the time of his death.

Mr. Brownson was actively interested in ornithology, a recognized authority on the local bird fauna of his region, and for some years editor of the 'Journal' of the Maine Ornithological Society, to which he was a prominent contributor. He also published popular articles on the birds of New England in the Portland 'Advertiser,' and frequently gave illustrated lectures on this subject before the Portland Society of Natural History and the Maine Ornithological Society. His loss will be severely felt, not only by these societies, in which he was prominently active, but by the city of Portland whose educational interests he efficiently promoted for many years.

THE new edition of the A. O. U. Check-List of North American Birds, which has been so long in preparation, is now in press, and its early publication may be expected.

As is doubtless known to many of our readers, the New York State Museum will soon publish a work on the Birds of the State of New York, by Professor E. Howard Eaton, who has for some years been engaged in its preparation. It will be in two volumes quarto, with numerous colored plates and text cuts. Volume I is announced as nearly ready for delivery; it will comprise over 300 pages of text and 42 colored plates; in addition to the generalities of the subject, it will include the species in systematic sequence from the Grebes to the end of the Pigeons.

MR. WILFRED H. OSGOOD has resigned from the scientific staff of the Biological Survey to accept the position of Assistant Curator of Mammalogy and Ornithology at the Field Museum, Chicago. He entered upon his new duties July 1, 1909. We trust that this will bring to him enlarged opportunities for technical work in zoölogy, for which he has shown such marked ability during his connection with the Biological Survey.

MR. ROY C. ANDREWS, Assistant in Mammalogy at the American Museum of Natural History, New York, is on his way to the Philippines to

join the scientific staff of the U. S. Fish Commission steamer 'Albatross,' and will make collections of birds and mammals and other natural history material during the cruise of the 'Albatross' in the East Indian Islands and northward to Formosa and the Batan Islands, in the interest of the American Museum.

MR. M. A. CARRIKER, JR., of the Carnegie Museum of Pittsburgh, who is well known for his work in Costa Rica as a collector of natural history material, left early in August last for South America to make collections of birds and mammals, and incidentally of insects and other special groups of animals. Beginning work in Trinidad, where he has been very successful, he will soon proceed to Venezuela, and thence westward across the continent to the Pacific coast, and southward to Bolivia. The trip is planned to occupy about three years, and to include many hitherto little worked localities. His birds will all go to the Carnegie Museum, and his mammals to the American Museum of Natural History in New York. He left in manuscript an elaborate work on the 'Birds of Costa Rica,' on the preparation of which he had been long engaged, to be published soon by the Carnegie Museum.

AN EVENT of interest to ornithologists is the recent transfer to the new National Museum building in Washington from the old Smithsonian building of the Division of Birds. This change, so long looked forward to, will be of inestimable benefit at least to the younger members of the Division staff and their successors, and indeed to all who will in future have occasion to refer to the collections.

The new quarters of the Division of Birds comprise three rooms at the west end of the top floor; two communicating outside rooms, one 38 feet square (the office), the other, in which the egg-collection is to be stored, measuring 38×33 feet. These two rooms are well lighted and afford a fine view overlooking the grounds of the Department of Agriculture, Washington Monument, White House, and a wide sweep of the western horizon, bounded by the Virginia hills. Across a hallway from these two rooms is the storage room for bird skins, a range running east and west, about 32×145 feet in size, in which the 305¹ cases containing the collection are arranged in long rows, in single series. This room faces an open court with large windows all along the side, affording an abundant north light, while the opposite side is lighted by a row of large ground-glass transoms.

In September, 1884, the growth of the bird collection of the National Museum to 100,000 specimens was announced (*Science*, IV, 497). The number is now more than double that figure, the last entry in the catalogue being No. 212,069.

¹ Of these 305 cases 140 are "half-units," measuring $4 \times 2\frac{1}{2}$ feet, the remaining 165 being "quarter-units," $2 \times 2\frac{1}{2}$ feet, all being 40 inches high. The egg collection fills 70 additional quarter-unit cases.

The writer remembers as well as if it were but yesterday when the entire unmounted bird collection of the National Museum was contained in some three or four dozen tin herbarium cases arranged, book-like, on shelves in the middle room on the second floor of the north tower of the Smithsonian building, excepting the larger birds, which were packed in several old-fashioned wooden cabinets and cases with open drawers, mostly in the west basement. Sometime during the later "seventies" these were transferred to heavy glass-topped square wooden boxes and removed to the topmost room of the south tower, the Curator's office being the room immediately beneath. Several years later¹ (during the earlier or middle "eighties") the collection of smaller birds and the Curator's office were changed to the southwest open gallery in the main exhibition hall of the Smithsonian building, where they remained until the recent transfer. Here were held all the meetings of the A. O. U. Committee on Classification and Nomenclature except the first (and possibly the second), members of which are able to realize more than anyone else except the Curator and his assistants the extreme disadvantages under which all work pertaining to the Division of Birds has hitherto been done.

Members of the Union will benefit greatly from the change through increased efficiency of the Committee, which will hereafter be able, for the first time, to perform the ornithological part of its duties under circumstances calculated to yield satisfactory results.— R. R.

THE Bristol County Academy of Sciences has recently been organized and incorporated under the general laws of Massachusetts, for the purpose of promoting and encouraging "public interest in all branches of natural history and in the liberal and useful arts, and in the conservation of our natural resources." A museum will be formed to illustrate the local fauna and flora, with a laboratory for the use of members engaged in special research and experimental work; and a bureau of information is to be established in aid of naturalists, agriculturalists, etc., to give information and practical assistance in the suppression of insect pests, the improvement of shade and forest trees, the reforestation of waste lands, etc. A library and lectures will also be provided, and publications will be issued whenever the results attained or the welfare of the public seem to render it desirable. The officers are: President, Henry F. Bassett; Vice-Presidents, Walter C. Baylies and Joshua E. Crane; Secretary, A. Cleveland Bent (Taunton, Mass.); Treasurer, Julius Rockwell; Curator, Frederic C. Carpenter.

AT THE annual meeting of the British Ornithologists' Union held in London in May last, a "new rule" was adopted to the effect that any member who "shall have personally assisted in, or connived at, the capture or destruction of any bird, nest, or eggs in the British Isles, by purchase or otherwise, likely, in the opinion of the Committee, to lead to the extermina-

¹ The exact dates of these changes cannot at this moment be ascertained.

tion or serious diminution of that species as a British bird," will render himself liable to have his name erased from the list of members without the assignment of any reason. He can, however, stand for reelection at the next annual meeting of the Union. Such radical measures, by an organization dominated by leading ornithologists, for the protection of waning species, indicates that ornithologists, as such, are not apathetic in the matter of bird protection.

FROM information recently published in 'The Emu,' it appears that the Lyre Birds of Australia are approaching extinction, having been killed for their beautiful tails, which are much sought after as an article of commerce. Steps have now been taken to prevent the total extinction of these beautiful birds, yet the slaughter is said still to go on. It is not long ago, according to Mr. S. W. Jackson, "that in a locality in the northeast of New South Wales a party of vandals organized a sort of Lyre-Bird 'drive'; surrounding a patch of scrub in which the birds were common, and setting fire to it, they shot down the unfortunate birds as they struggled through one pitiless ring of fire only to meet their death in another. Finally the tails were cut off and the bodies left to rot, much as the victims of Red Indian warfare are scalped and abandoned."

WE ARE glad to learn that important restrictions have been placed on the export of the plumage of "Birds-of-Paradise, Goura Pigeons, and Osprey" (Egrets), from New Guinea. An Act of the Territory of Papua, passed in October, 1908, renders it unlawful "to export or take, or send out of the Territory the skin, feathers, or plumage" of any such bird without the "written consent obtained beforehand" of the Collector or other principal officer of Customs of the Territory. Furthermore, on the 5th of June, 1909, the Governor General (William Humble, Earl of Dudley) of the Commonwealth of Australia, acting with the advice of the Federal Executive Council, issued a proclamation rendering unlawful the importation into the Commonwealth, of the plumage of any such birds except with the written permission of the Collector of Customs of the Territory of Papua. It is to be hoped that similar steps will be taken by other governments to check the export, and thus the wholesale slaughter, of 'plume birds,' not only in New Guinea, but in other tropical islands and countries.

THE Twenty-seventh Stated Meeting of the American Ornithologists' Union will be held at the American Museum of Natural History in New York, beginning on the evening of December 6, 1909. The evening session will be for the election of officers and members, and for the transaction of routine business. Tuesday and the following days of the session will be devoted to the presentation and discussion of scientific papers and will be open to the public. Members intending to present communications should forward the titles to the Secretary, Mr. John H. Sage, Portland, Conn., in time to reach him not later than December 2.

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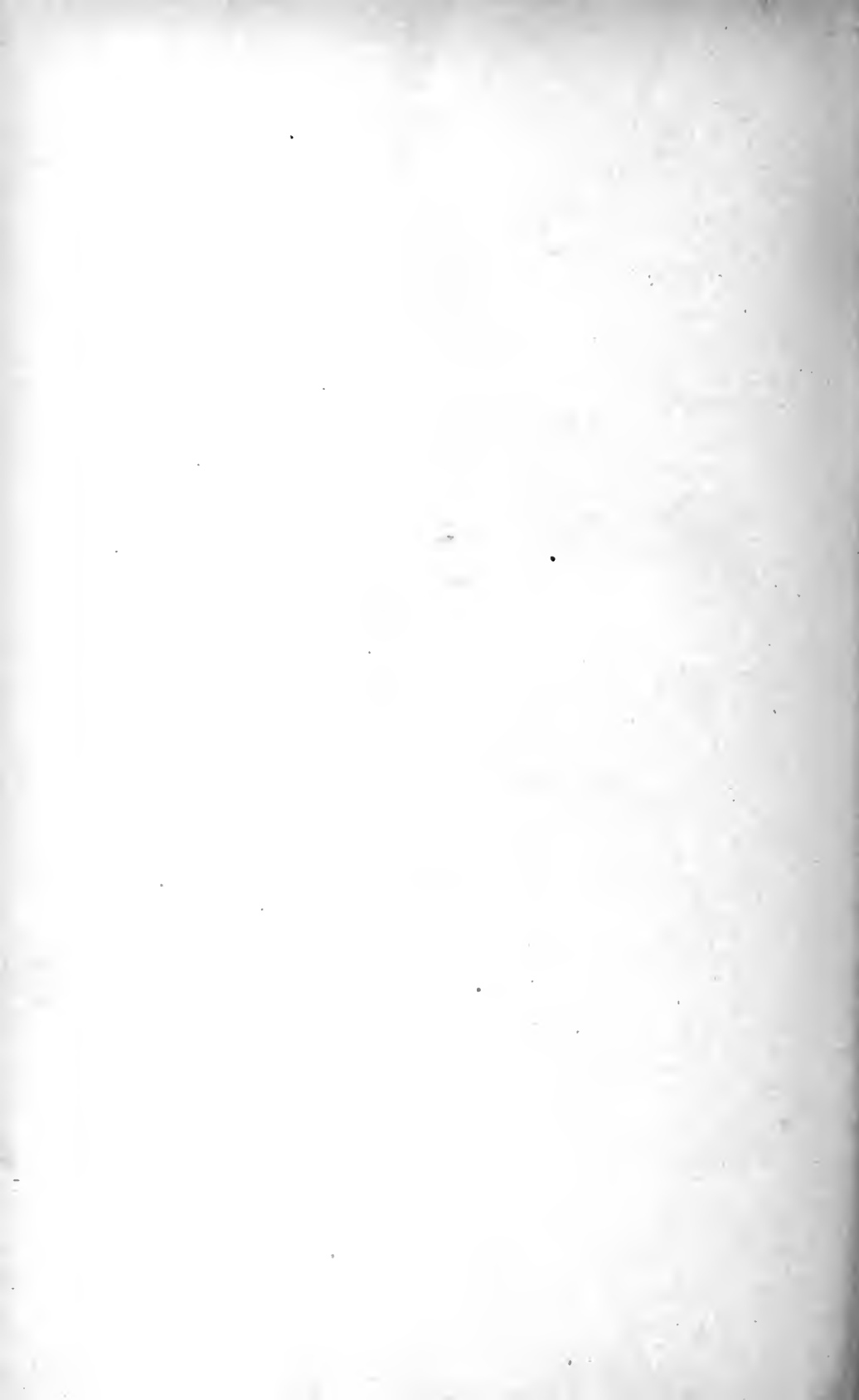
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ERRATA.

- Page 61, lines 1 and 2, for **Totanus** read **Helodromas**.
" 88, line 4 from bottom, for **Thryothorus** read **Thryomanes**.
" 95, line 12, for *Procellaria* read *Procellaria*.
" 146, " " from bottom, for **Helodramas** read **Helodromas**.
" 147, " 24, for **kreideri** read **krideri**, and for **KREIDER** read **KRIDER**.
" 305, lines 2 and 5, for **Wilmington** read **Wilmington**.
" 370, line 13, for **hyemalis** read **hiemalis**.
" 396, line 7, for **Zanthocephalus zanthocephalus** read **Xanthocephalus xanthocephalus**.

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- Page 406, line 6, for **Daniel** read **Robert**.
" 2, from bottom (in footnote), for **sister** read **daughter**;
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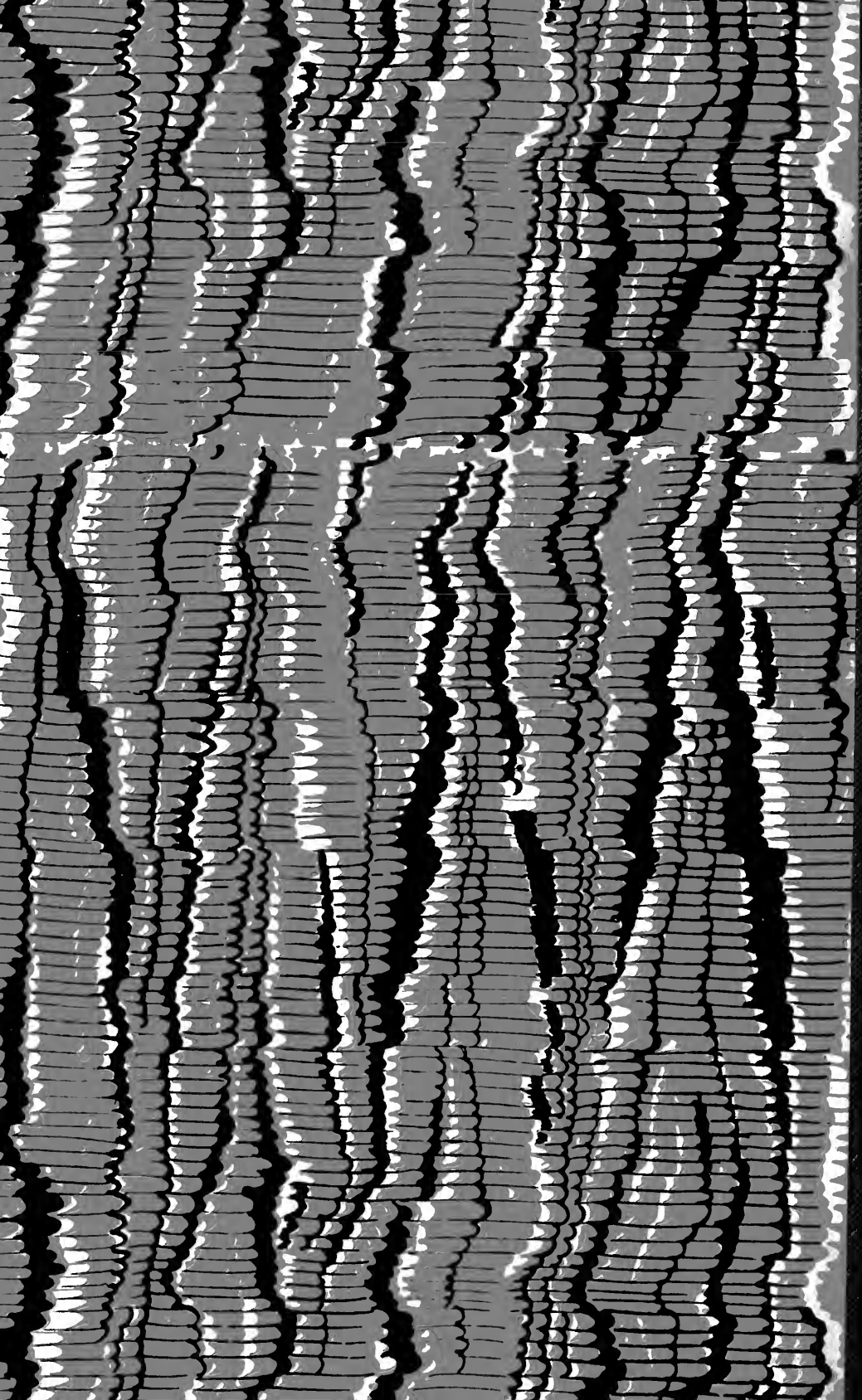
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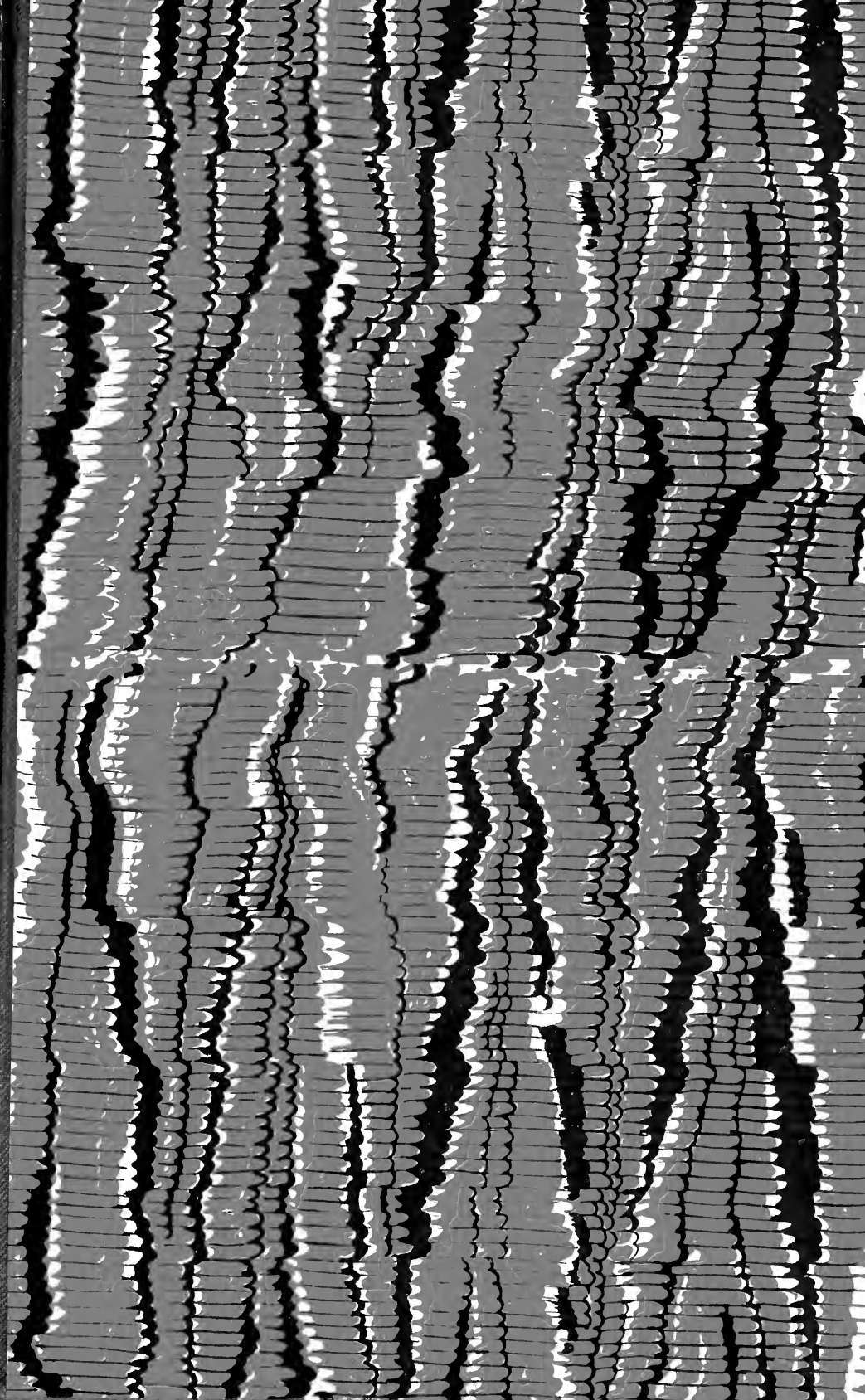












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